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International Chemical Relations

THE annual meeting this year of the Association of British Chemical Manufacturers demonstrated one achievement of real statesmanship, namely, the smoothness with which any readjustments of outlook and point of view, necessitated by the sudden emergence of a great chemical fusion, have already been made. Imperial Chemical Industries, Ltd., represents about one-third of the capital of the firms in the Association. Some anxiety, it was freely admitted, was at first felt as to the possible effect of an aggregation of such great units upon the remainder; already this has been replaced by confidence, and by a positive belief in ultimate benefit for all. Indeed, the good effects are becoming visible in the ability of British chemical industry to take part effectively in European conferences on industry, and to promote broad agreements or at least understandings on international commercial practice and policy. This inauguration of what was happily described as "one-way traffic" is a sign of great promise, and all who have helped to bring it about are to be congratulated. Almost at one stride British chemical industry, as represented by the

Association, has passed from a national to an international factor.

This last aspect of the matter was well put by Sir John Brunner and the Chairman (Mr. C. A. Hill). The main topic discussed at the Berlin Conference was that of restrictions on imports and exports. The Germans have begun to feel that their system of tariffs is a hindrance to their trade expansion. Naturally, as Sir John Brunner put it, every individual manufacturer desires to see the tariffs retained that are favourable to himself, and every one else placed under a system of Free Trade. The German view is toward the lifting of restrictions. Apart from the tariffs themselves, there is the most troublesome variety in their nomenclature and machinery, making the whole process of export trade more difficult. Here, again, some international understanding seems almost in sight, for if Germany sets the example, the others are almost sure to follow. Out of these international conferences one new question arises, as Mr. Hill clearly pointed out. If they persist, it seems doubtful whether the heads of big businesses can continue to give the time, work, and money involved in personal representation, and in future the work may have to be handed over to a corps of professional diplomats. In any case, it is clear, so important are the results already in view, that the conferences must continue.

In the Chairman's speech and in the course of discussion a catalogue of domestic and international questions of direct or secondary interest to chemical industry was reviewed—the French Customs Tariff, the threatened tax on benzol, the Merchandise Marks Act, the Safeguarding of Industries, the Preservatives in Food Regulations, the Therapeutic Substances Regulations, the question of industrial alcohols, the representation of industrialist interests on local authorities, and others. Mr. Carr, on the Therapeutic Substances Act, pointed out not only that the intention of the Act was entirely benevolent, but that, if properly handled, it might do much to build up a particular branch of chemical industry in this country. As, however, in all such legislation, it depends upon the spirit in which it is administered and the type of inspectorship imposed, whether or not it strangles the development of the industry. The manufacture of insulin, for example, on which Mr. Carr speaks with authority, is very largely controlled as therapeutic substances will be in the future, and to-day the British industry has been raised to a standard of control almost foremost in the world.

Looking broadly at the position to-day, as revealed by the Association proceedings, Sir William Pearce might well point with pride to the progress in the position of synthetic organic chemistry in this country. The Association of British Chemical Manufacturers is about ten years old. The work it has done in organising

interests, always important but previously existing in bits and sections, into one coherent and conscious entity, the sense of solidarity and power it has brought into life, the new industries it has seen established within its lifetime, the vigour and imagination with which it is approaching the problems of the future—all this makes an impressive and most encouraging story of achievement. The new situation produced to-day by the immense amalgamations of chemical interests, both here and abroad, has, instead of restricting its outlook and field, merely enlarged the Association's mission. It is the result of something far larger than mere tact; it amounts to vision and statesmanship.

Effluent Liquor from Sulphate Plants

IT is known that increasing difficulty has been found of recent years in the disposal of the effluent liquor arising in the distillation of gas liquor in the manufacture of ammonium sulphate and other ammonium compounds. So serious did the question become, that on the initiative of the National Gas Council, the Institution of Gas Engineers appointed in June, 1926, a committee to investigate the methods which might be adopted for minimising the production of gas liquor effluents, or for rendering such effluents suitable for discharge to rivers and streams. From the preliminary report that has now been issued, several questions arise. First, having regard to the fact that the steaming of the incandescent coal substance in horizontal or vertical retorts results in an increase of about 100 per cent. in the volume of gas liquor, can this procedure be justified? If it is desired to produce blue water gas, it would seem preferable to use a recognised type of plant, and not to resort to improvised apparatus. Secondly, need the volume of gas liquor produced in the carbonisation of coal be more than that due to the amount of moisture in the coal and the nature of the coal substance? In other words, need it be more than 14 to 16 gallons per ton of coal carbonised? Thirdly, cannot an inexpensive oxidising agent be found, at least in certain areas of the country, which will oxidise such constituents of the effluent liquor as phenol, thiocyanate, and thiosulphate, and render the use of unwieldy biological filtration beds and effluent liquor storage tanks unnecessary?

No one can cavil with the programme of research which has been approved, and which is outlined in detail in the preliminary report. It cannot be doubted that the separation of tar from the hot gas before more than a small proportion of the liquor is condensed, would result in the production of ammoniacal liquor of low oxygen absorptibility. Equally, the effect of rapid cooling of the gas and the avoidance of the circulation of ammoniacal liquor through the foul main of the gas producing plant may have desirable results from the point of view of reducing the toxicity of the gas liquor. But when all the above considerations are taken into account, it becomes increasingly clear, having regard to the anticipated further reduction in the price of sulphate of ammonia, that a simple and inexpensive method of treating effluent liquor must be found, if it is to be satisfactory for the gas and chemical works of this country.

Fuel Research Progress

THOUGH there is no theatrical achievement to be recorded in the report for 1926 of the Fuel Research Board, there is ample evidence of steady application to the many fuel problems now engaging attention and of the great expansion of this field of research in recent years. If the report is not distinguished for any outstanding conclusions that have been reached, it is a valuable body of knowledge, and the series of reports is already the nucleus of a fuel library. Of late the research staff has been directing attention to the low temperature carbonisation process, and the general conclusion has been reached that it may be a good starting point. Up to now, though promising results have been obtained, the difficulty has been to turn the process into a sound commercial proposition, which is the ultimate test. The scheme which has been entered into between the Government and the Gas Light and Coke Co., the details of which have been already published in our columns, seems admirably designed to explore thoroughly the commercial and technical possibilities, and the results of this experiment will be watched with great interest.

The most interesting part in the report, perhaps, because it is dealing with new ground, is the intermediate scale test the staff is conducting into the Bergius system of hydrogenation, the main principles of which are now familiar. The fact already established is that British coals are found to be suitable for treatment, and that it is possible to obtain a far greater proportion of liquid fuel than by any other method at present known. The hydrogenation process yields 50 to 60 per cent. of crude oil and spirit, 20 per cent. of gas, and about 15 per cent. of partially converted organic matter, in comparison with 10 per cent. or less of oil-producing tar, which is the maximum yield obtainable from similar coals by low temperature carbonisation. This, of course, marks a wide difference in results, but here again there are many other factors to be investigated, and the economic possibilities of the process have yet to be determined. There are many other investigations in progress which are steadily adding to our stock of exact knowledge.

American Views on Cartels

THERE has recently been a good deal of evidence that the United States is observing events in the European chemical industry with growing anxiety. United States consuls in Germany pay a great deal of attention to the activities of the I. G., and, of late, extended accounts from this source of the activities of the great German trust have become a regular feature of the American chemical journals. Equally close is the attention which is being paid to I. C. I. It is of special interest to European observers of opinion in the United States that recent hints of some kind of an understanding between the chemical industries of Great Britain and Germany seem to have given rise to a great deal of agitation across the Atlantic. For the moment, most attention is being paid to the question of dyestuffs. It is plainly said that a combined effort on the part of British and American dye manufacturers would not only hit the American

markets in the Far East very heavily, but that European products might be able to break through the United States tariffs. The recent reduction in the dyestuff price factor has also been duly noted and commented upon in this connection.

An interesting (and perhaps at times rather amusing) point in the American comments on the situation is in regard to the action which is suggested to protect the American dyestuff industry from the expected European attack on world markets. It is, for example, urged that more co-operation is needed in the industry. Reading between the lines, it is quite clear that American opinion favours not co-operation so much as combination to meet European combinations. It is pointed out by one writer that "the anti-trust laws, which have apparently not hindered other industries from forming trusts, should certainly not be allowed to stand in the way when the safety of our key industry is threatened; proper Federal checks can be devised to protect consumers." To the European eye, it seems a somewhat strange turn of the wheel that the Americans, having devised laws to limit powers of combination in their own country, should now be busily engaged in seeking ways and means to protect themselves against attacks which they fear will come from foreign combinations. It may be surmised that one possibility is a change in the American anti-laws.

The Problem of Exit Gases

No one who has studied the laboratory work conducted by Dr. T. Lewis Bailey, chief alkali inspector, and his assistants, in 1925, and who has carefully examined the data furnished in connection with the semi-technical trials on actual Gay Lussac tower exit gases, can reach any other conclusion than that the use of water as a final washing medium is justified. It is true that from the earlier particulars afforded it was doubtful whether this method would prove to be a permanent success. The concentration of sulphuric acid at the present time is by no means an inexpensive operation, and to introduce water to the sulphuric acid system is a procedure which cannot be contemplated without misgiving. On the other hand, if one proposes to exclude the weak acid solution resulting from the water wash in question, it is clear that one is faced with the production of an acid effluent liquor, the disposal of which is by no means easy.

These were the considerations which exercised the minds of managers of sulphuric acid plants prior to the issue of the 63rd annual report of the chief alkali inspector. From the information now furnished, it is clear that only $1\frac{1}{2}$ to 2 per cent. of the total quantity of acid produced need be used in the form of a water wash. There are few acid plants that will be unable to deal with this small volume of added water. The weak acid solution resulting from the water wash can easily be transferred to the Glover tower and there dealt with suitably. In the absence of the experiments which have been conducted, no one would have suspected that the efficiency of the water scrubber as regards absorption of SO_2 in the recovery of nitre acids was highest when the total acidity of the entering gases was low, nor would they have imagined that the

fixation of the nitre gases is most readily and completely effected when sulphuric acid is absent. It is quite certain that the proposed method will not only be successful in removing the coloured discharge which is usually associated with most vitriol plants, but the employment of water will eliminate some of the particularly offensive gases, and at the same time reduce their acidity to a very low point.

The Science of Advertising

THE Duke of York, during his visit to the Advertising Exhibition at Olympia this week, remarked that advertising has become a great power in the land and even a new form of education. No one can visit the exhibition without realising how what was once a mere incident in business has now developed into a great commercial science. It is not a mere appeal for orders, though that is an essential result, but a general education of consumers in the uses and qualities of the products of industry. By its means the advantages of the concrete results of science and industry become widely known, and improvements are thus being steadily introduced into our whole civilisation. The large firms have led the way along these new lines; while a few years ago anything might be considered good enough for advertisement purposes, the best that art and journalism can produce is now eagerly sought for. This all points to a growing consciousness of the importance of organised and systematic advertising, and the visit of a first-rate advertising expert, instead of being dreaded and if possible avoided, is now welcomed. And among all the popular forms of advertising—posters, brochures, circulars and folders and the like, many of them works of real beauty—it is now established that newspaper advertising, when well done, remains the most effective medium.

Synthesis of Rubiaden

THE information reaches us from an Indian chemical correspondent that Dr. P. C. Mitter, Professor of Organic Chemistry of the Calcutta University, has, with the aid of his colleagues, arrived at a synthesis of Rubiaden, a natural colouring matter found in Madder. This important discovery holds considerable possibilities of advancing and improving the dyeing industry. It opens up a new field of investigation in the synthesis of natural products. Mitter himself was one of the favourite students of the famous Professor Liebermann, whose discovery of the constitution of alizarine has almost revolutionised the modern dyeing industry. Madder is the root of *Rubia Tinctoria* and other plants belonging to the same family. It was originally grown in Japan, Turkey, and West Europe. Madder was formerly very valuable on account of the colouring matters, alizarine and purpurin, which are found in the root as glucosides. It has since then, however, been superseded by synthetically prepared alizarine.

The Calendar

July 18-23	Advertising Convention and Exhibition.	Olympia, London.
Aug. 31-Sep. 7	British Association for the Advancement of Science: Annual Meeting.	Leeds.

Association of British Chemical Manufacturers

Current Problems of British Chemical Industry

The annual meeting of the Association of British Chemical Manufacturers was notable for the discussions on international industrial relations, in which several of the leading members took part, and for the general satisfaction expressed at the formation of Imperial Chemical Industries, Ltd.

THE eleventh annual general meeting of the Association of British Chemical Manufacturers was held at the Chemical Society's Rooms, Piccadilly, London, on Thursday, July 14, Mr. C. A. Hill presiding.

Chairman's Speech

The CHAIRMAN, in moving the adoption of the Council's report, referred to the paragraphs relating to international relations and to the important developments which had taken place in the formation of Imperial Chemical Industries, Ltd. This great amalgamation, he said, represented about one-third of the capital of the firms who were members of their Association. From the international aspect, there were undoubted advantages to British chemical industry in having an organisation of such size and importance.

Referring to the conferences between representatives of the Federation of British Industries and representatives of the corresponding organisations in France, Germany, and Italy, he said that the burden of the work of representing the chemical industry had fallen on Sir Max Muspratt, with the assistance of the general manager. At the conference in Berlin the previous week, in the absence of Sir Max Muspratt, Sir John Brunner and the general manager had represented the Association. All the conferences were bound up with the League of Nations Economic Conference at Geneva, and British chemical industry through the Association had efficiently played its part. Their thanks were due to these gentlemen for the splendid manner in which they had represented this country through a long and arduous conference and for the brilliant results achieved. The presence of their general manager raised the question, if these conferences persisted, whether private individuals who were directors of companies could continue to give their time, work, and money to this work of representation; or whether, on the other hand, these conferences should be attended by professional delegates forming a corps of professional diplomatists. In the former case they had the knowledge of the expert and the ability of the business man with the enthusiasm of the amateur. In the latter case they might have equal knowledge, equal ability, and in time greater experience, but they had to contemplate the possibility of such conferences becoming more stereotyped. If the conferences continued they would be bound to take part in them to secure proper representation for this country's interests.

Referring to the proposed new French Customs Tariff, the Chairman said it was unfortunate that, at a time when all nations were considering the possibility of lowering their tariff walls, these new proposals should have been made. The Association had made certain proposals to the Board of Trade for the revision of the suggested duties on certain chemicals, and were awaiting the result.

Domestic Legislation

Turning to domestic legislation, the Chairman mentioned the proposed Factories (No. 2) Bill, and said that had it been carried it would have cost chemical industry and the other great industries of the country a very considerable sum of money. The increased standard of living, even through the slump years, was putting upon industrialists the biggest burden they could safely bear, without a last straw which would so cripple industry as to throw tens of thousands out of employment. Respecting the motor-car taxation, they only expressed an opinion on this from one point of view, and that was the position of benzol. They felt that, if petrol were taxed, there must be included a tax on benzol. The Council had called the attention of the Chancellor to this, and pointed out the disastrous effect on chemical industry, in particular on the dyestuffs section, if a benzol tax were imposed. He was glad to see that no tax had been proposed in the Finance Bill at present before the House. With respect to the Rating and Valuation Act of 1925, he referred to the valuable part played by Dr. Clayton on behalf of the Council during the

Bill's passage through the House. While opinions in the chemical trade were somewhat divided as to the effect of the Merchandise Marks Act on home trade, the Board of Trade efforts in explaining and ameliorating some of the difficulties were generally welcomed.

Respecting the regulations recently issued under the Therapeutic Substances Act, the Council has had preliminary consultations. This was a new type of problem, and time would show that in practice some of the regulations would require modification. This had already been anticipated, and the Minister of Health had given an assurance to consider their revision. Manufacturers of *bona-fide* therapeutic substances welcomed the Act, which would be helpful to manufacturers as well as beneficial to the community.

Industrial Alcohol

Referring to an Inter-Departmental Committee set up to consider the question of alcohols in industry, there was every reason to believe that such a Committee would present a valuable report, yet all their efforts to obtain a copy of it had failed. He sincerely hoped that the suppression of this report and the substitution of two preliminary answers would not be accepted by the Chancellor as a proper method of treating their industry. It now seemed probable that the Department of Overseas Trade would be retained as a separate Department, and he thought they would all welcome that. It followed that the British Industries Fair would be continued under the same auspices as before, and they were already well ahead with their preparations. The chemical hall would be moved from Hall A at the extreme end of the Fair to Hall K, which was more in the centre near the marketing board and between foods and textiles. This change would necessitate a certain amount of publicity, and a number of members had placed at the disposal of the general manager certain advertising pages in various periodicals for the purpose of advertising the chemical section.

After appealing to the members to supply all statistics required by the general manager, the chairman moved the adoption of the report.

The Geneva Conferences

Mr. R. G. Perry, Vice-President, in seconding, said that at the close of last year there was produced, at Geneva, a German monograph on chemical industry. This document was sent to the Association of British Chemical Manufacturers, and the Council decided that the British point of view ought to be forthwith presented and another monograph prepared. This was prepared and despatched within ten days, and was one of the most brilliant pieces of work that their Association had ever done. They ought specially to congratulate the general manager on its production. He had personal evidence, from friends in America, that that monograph was greatly appreciated, and it had the effect of increasing not only the friendship but the respect of the American and other delegates. In view of the present trend towards combinations of countries, industrial associations, such as theirs, would become still more essential. Members who had their own businesses to look after could not be expected to attend at Berlin, Rome, Geneva, or Monte Carlo (laughter) for International conferences, and the Association would have to possess professional diplomats to whom this duty could be delegated. Referring to this as the birth year of the largest and most powerful combination that British chemical industry had ever known, he said it was a pleasant vista to them all to see old enemies becoming new friends to the lasting benefit of our nation, and they might claim that the A.B.C.M., during the last ten years, had played no small part in bringing about a better understanding.

In the discussion that followed, Mr. T. Morson suggested the need of members getting into touch with local associations of manufacturers, and seeing that industrial interests were properly represented on local bodies.

Industrialists and Local Authorities

The Rt. Hon. J. W. Wilson suggested that manufacturers should endeavour to secure representation on local authorities. He thought that in many districts, where a limited company had a large employment in the district, anyone connected with the firm, not necessarily a director, would receive a great deal of loyal support from the employees without any pressure and without politics coming into the question at all. Again, help might be given as regards polling, and facilities given, in the dinner hour or some other time, for the workpeople to go to the poll. In this way something might be done to alleviate the local burdens on industry. He was most impressed by Sir Max Muspratt's report on the unanimity of the Geneva Conference, respecting the present condition of tariff walls in the South of Europe and the Central Provinces of Europe. They had all been busily building up walls against themselves and causing disaster by that means. It was not a question of free trade *v.* tariffs, but it was impossible for small communities to gain in that way the strength they required. They wanted the United States of America and the United State of Europe to unite in a United States of Commerce.

International Industrial Agreements

Sir John Brunner, in response to a request from the Chairman to give some account of his recent visit to Berlin, said that, generally speaking, the two conferences were very useful both directly and indirectly. They discussed a number of subjects, the main one of which was the subject of restrictions on imports and exports. He thought they could take it that the Germans felt that their system of tariffs was a hindrance to their expansion of trade. Naturally, every individual manufacturer, who depended upon a trade, wished to have kept in the tariff items favourable to himself, and he would like to see everybody else under a system of Free Trade. That was the position in every country in the world. On the whole, they could see that there was a tendency, in Germany, to ask that restrictions on imports and exports all over the world should cease. They then had a discussion on tariffs from the point of view of classification and nomenclature. The chemical trade did not feel this question so acutely as some other trades. The other matter which was brought up was that tariffs were built up in very different ways. Some people in some countries based their classification upon the source of the item to be taxed. Others based it upon the uses to which the article was to be put in their own country. Apart from these differences of classification, there was an enormous difference in the wording of tariffs, which made it extremely difficult for people, who exported to all the countries in the world, to find out what to manufacture at any particular period. Another matter of discussion was the question of double taxation in Germany and England, and they came to a resolution to press upon their respective Governments the necessity for doing away with double taxation in the two countries. That was a great hindrance to international trade. He believed that the two Governments were studying this question with the idea that some international agreement might be made. If Germany did it, then the idea would no doubt spread among other countries.

Fairs and Exhibitions Overdone

The question of fairs and exhibitions was considered, the general feeling being that these fairs and exhibitions were absolutely and utterly overdone in the world. The opinion was expressed that they were very largely becoming a question of blackmail among the traders of various countries. These, shortly, were the results of their conference. He believed the conference would have very good results indirectly. They had had conferences, of another character, at Romsey and Leverkusen, which covered a great deal wider ground. He felt that these international conferences would result in better relations between themselves and Germany, and, ultimately, in better relations with other countries. He thought it was time that they should make every effort possible to eliminate all the traces of the late lamentable war. (Hear, hear.)

Mr. J. Deacon, speaking of co-operation, thought that a scheme would be workable among the members of the Association if the quantities of their contracts, over a year, could be placed before a committee. They all had to face the difficulty of booking contracts and estimating their requirements, and the committee could consider the advisability of allocation.

The Association's Future

Mr. E. V. Evans agreed that the Association had played a large part in paving the way for the great chemical fusion. At first he felt that the work of the Association would be less now that so much of the chemical industry was fused together, but, on second thoughts, that opinion was entirely reversed, and they had only to read the report, which spoke of the work done by Sir Max Muspratt and Sir John Brunner, and that one-way traffic man, through which all Association matters went, the general manager, to know that what the Association could do for them in the future would be even greater than it had done in the past.

Therapeutic Substances Act

Mr. F. H. Carr, referring to the Therapeutic Substances Act, said the intention of the Act was entirely benevolent, but it might, if properly handled, become more than a mere benevolent influence; it might do much to build up a particular branch of chemical industry in this country. The manufacture of therapeutic substances in this country was in its infancy and it had an immense future before it, but it entirely depended on the spirit in which the Act was administered, and the type of inspectorship imposed whether or not it strangled the development of the industry. The manufacture of insulin was very largely controlled in the same way as therapeutic substances would be in the future, and, to-day, British industry had been raised to a standard of control almost foremost in the world. In the report, reference was made to alcohol, and he would say, after much consideration, and without any fear of contradiction, that no single act ever did more harm to chemical industry than the Government's attitude in the past with regard to alcohol. He hoped the Association would continue to press for a report until they got a clear understanding with the Government that they were doing all they could to help the industry.

Post-War Progress

Sir William Pearce reminded the meeting of the very great improvement that had taken place in the industry since the War. When he remembered the position before the war of the dyestuffs industry, and of the synthetic organic chemical industry, the improvement was extremely marked. He was positive that the greatest future lay with synthetic organic chemistry. A good many people, like himself, probably at first felt a little trepidation with regard to the great fusion, but he now believed that it would be of great benefit, and they all wished it success.

Nobel's Annual Meeting: An Optimistic Report

SIR HARRY MCGOWAN, presiding at the eighth annual general meeting of Nobel Industries, Ltd., held in London on Friday, July 15, said that there was every reason for congratulation on the results for the year, more especially in view of the protracted coal stoppage, which had naturally affected the home trade, particularly in explosives. Apart from explosives, however, the return from constituent and associated companies had been well maintained, and dividends from investments showed a substantial increase. Further, no charge for investment losses had had to be made. The company's general export trade had been well maintained; their continental investments continued to do well, and highly satisfactory progress was being made by their interests in the colonies.

With regard to the formation of Imperial Chemical Industries, Ltd., the Nobel Co. possessed financial strength and commercial ability, but he was more than ever convinced of the wisdom of the recommendation made to the shareholders seven months ago. He felt it would be of interest to shareholders to know that the invitation to exchange their shares for those of I.C.I. had met with almost unanimous and immediate response, and at the present time of the share capital of Nobel Industries there was only 1.1 per cent. unexchanged, and of the four participating companies overall less than 1.2 per cent. was outstanding. Of those, in the case of Nobel Industries, Ltd., and, he believed, also in the case of the other companies, a large proportion was represented by holdings abroad and executorship accounts, the legal formalities in connection with which, although involving delay, were gradually being cleared up and exchanges effected.

Report of the Fuel Research Board for 1926

Some Important Results

The Report of the Fuel Research Board for the year 1926, just issued by the Department of Scientific and Industrial Research (H.M. Stationery Office, pp. 62, 1s. 3d.), contains accounts of some interesting advances which have been made in regard to various matters such as low-temperature carbonisation, hydrogenation of coal, etc. Some account of the report is given below.

THE report states that the year under review has been one of great difficulty owing to the long stoppage in the coalfields, which interfered seriously with the large-scale work at the Fuel Research Station, and with the development of the work of the Physical and Chemical Survey of the National Coal Resources. Disastrous as the coal stoppage has been in many ways, there are signs that gain as well as loss may result. It is becoming more universally realised that the proper utilisation of our coal resources is of importance to the coal industry and to the general industry of the country, and that a condition precedent to this is a knowledge of the characteristics of the various coals available, of the purposes for which each variety is most suited, and the methods by which it can best be prepared for utilisation. It is most encouraging to those engaged in this work to find that its importance is being more widely recognised, particularly in the coal-mining industry.

As regards the analysis of coal, the committee has issued its revised report. Attention is being paid to the determination of phosphorus in coal ash, and of the effect of the presence of arsenic, silica, titanium, vanadium, etc., on the determination of the phosphorus.

It was not possible, owing to restricted supplies of coal, to proceed as rapidly as had been intended with the work on carbonisation in either the old vertical or the new horizontal gas retorts. The new setting of horizontal gas retorts started carbonising in February, 1926, and the staff are now familiar with its working. A comprehensive programme of research is now in progress.

Low-Temperature Carbonisation

It may be said at once that distinct progress has been made in the work on low-temperature carbonisation, both at H.M. Fuel Research Station and by private workers. It must necessarily be several, and probably many, years before any appreciable fraction of the 140 or so million tons of coal burned in the raw state in this country each year is treated by this method. That this is inevitable will be shown by a consideration of the stages through which any process of this type must necessarily pass before it is adopted on a large scale. These stages may be stated as follows:—

- (1) The suggested method must be investigated under laboratory conditions.
- (2) The process must then be carried a stage further by erecting an intermediate-scale unit.
- (3) Making use of the information yielded in stage 2, a full-scale unit must now be erected and tried out. The size of this unit might range between, say, 5 tons and 100 tons daily capacity.
- (4) A commercial battery consisting of several units similar to those developed in stage 3 would then be erected in some favourable locality, and the economic possibilities of the system examined in actual practice, and, if necessary, tested by actual commercial audit.

Two Hundred Methods!

There are probably about two hundred methods of low-temperature carbonisation which have been suggested, and more or less proved, at any rate, to the satisfaction of their sponsors, so far as stage 1. There are a few being developed on sound lines, most of which have reached the end of stage 2; five or six are approaching the end of stage 3; two or three are in stage 4, but no one has yet reached the end of stage 4, where audited figures can be produced to show that actual profits have been made under normal working conditions. In every case where an attempt has been made to omit one of the stages enumerated above, the result has been disaster.

Important results have been achieved in regard to the type of retorts required for low-temperature carbonisation. The latest setting—the "E" type of retorts—have now been working for 12 months with very considerable success. The distortion occurring in these retorts is much less than in the earlier "D" type. A new type of retort, which will, it is hoped, withstand temperatures up to 625° C., has been

designed in co-operation with Professor H. C. H. Carpenter and the British Cast Iron Research Association.

Study of Low-Temperature Tar, etc.

There is still much to be learned as to the composition and best method of treatment of the tar obtained by low-temperature carbonisation of coal. A series of experiments has been carried out in small horizontal retorts to determine the effect of temperature of carbonisation on the yields of products. The same coal was used in every case, and all conditions, except the temperature of the retort setting and the time of carbonisation, was kept as constant as possible.

It is noteworthy that in this series of experiments, and in these particular retorts, the maximum yield of tar is produced at a temperature of 550° C. in the retort setting, and that above this temperature the tar yield falls off and the gas yield increases. It is also noteworthy that the liquor (aqueous distillate) formed is acid at temperatures up to 500° C. and alkaline at 600° and over. The results of the examination of the tars produced and of the oils obtained from these also indicate that in the conditions of this experiment 550° C. is a critical temperature.

Investigations on both major and minor constituents of distillates from low-temperature tar are in progress at the Chemical Research Laboratory, Teddington. A method has been devised for the decolorisation and deodorisation of neutral oils. From the highest fractions of the tar-oils, complex aromatic hydrocarbons and waxes have been separated. Samples of the more volatile phenolic substances have been furnished to the Air Ministry's Laboratory for examination as to their anti-detonating properties.

Fuel Production Co., Ltd.

In view of the considerable progress made both at the Fuel Research Station and elsewhere, much consideration has been given to the best method of carrying any suitable process to the final stage of its development, namely, a test under commercial conditions, and on a commercial scale, extending over several years. In view of the fact that large quantities of rich gas form a valuable portion of the products of carbonisation it seems that the co-operation of gas undertakings would be desirable if such processes were adopted throughout the country. The Government therefore asked for the assistance of Sir David Milne Watson, of the Gas Light and Coke Co. The latter, after consideration of all the processes being developed in this country and on the Continent, reported that he considered the one developed at the Fuel Research Station to be the most promising for development in conjunction with a gasworks.

Sir David Milne Watson offered a site for a 100-ton a day plant for putting the method to a practical test. It was finally arranged that a subsidiary company should be formed termed the "Fuel Production Co., Ltd.," the capital of which has been guaranteed under the Trades Facilities Act. The Gas Company will act as managers for the Fuel Co. and will bear all running and management costs. At the end of 1930 the Gas Company have an option to purchase the plant, or if they do not wish to do this they will clear the site and dispose of the plant, etc., on behalf of the Fuel Company. Details of the plant are now being worked out, and it is hoped that it will be at work during next winter.

It has been agreed that the Company shall keep full records of experiments and all statistics necessary to demonstrate the results obtained, and to keep proper accounts in connection with the business of the Fuel Co. Steps have been taken to safeguard the public interest in any patents that may be taken out as the result of working the plant, and full details of the plant and the results obtained will eventually be published and be freely at the disposal of any company desirous of working the process. Thus it will be seen that the Gas Light and Coke Co. are in effect carrying out the work for the benefit of the whole industry. This arrangement should provide definite information as to the commercial possibilities of the process.

The Bergius Hydrogenisation Process

An option on the rights in the Bergius process for the British Empire was held by the British Bergius Syndicate, and subsequently an agreement was entered into by the Department of Scientific and Industrial Research with the Syndicate, the International Bergius Co. (who own the rights in the process outside Germany), and Dr. Bergius. Under this agreement experiments were carried out during 1926 to test the suitability of the process for the treatment of British bituminous coals, an intermediate scale continuously working plant installed by Dr. Bergius at Mannheim-Rheinau being used for the purpose.

The experiments are controlled by a joint committee of the parties to the agreement, and full information as to the results is in the possession of the Department. The results show conclusively that such British coals as have been examined are suitable for the treatment, and that by this means it is possible to obtain from the coal a far greater proportion of liquid fuel than by any other method at present known. The yields so far obtained from typical bituminous coals are somewhat as follows: crude oil and spirit, 50 to 60 per cent.; gas, 20 per cent.; partially converted organic matter, 15 per cent.; and the remainder water and inorganic matter. This compares with, say, 10 per cent., or less, oil-producing tar, which is the most obtainable from similar coals by low-temperature carbonisation. The oil produced contains cyclic, aliphatic, and aromatic hydrocarbons, phenols, and a small proportion of acids and bases; on distillation some 20 to 25 per cent. of the oil remains as pitch. The above-mentioned yields are obtained from the coal actually treated, and in quoting them no allowance has been made for the considerable amount of coal required for the heat, power, and production of the hydrogen used in the process.

A plant similar to the one at Mannheim has now been erected at the Fuel Research Station, and, together with a plant for the preparation of the necessary hydrogen, actually started work in February, 1927. The continuously working plant is capable of treating about 1 ton of coal a day. The engineering problems involved in working at the temperatures and pressure required are obviously considerable, but have been surmounted so far as the intermediate-scale plant is concerned. It is understood that two or three large-scale plants are being erected in Germany, and their working results will be awaited with interest.

There is still much to be learnt as to which coals are most suited for the treatment, and as to the optimum conditions of temperature, pressure, and throughput for each coal. The economic possibilities of the process are as yet unknown. The process can only be considered as approaching the end of the intermediate-scale unit stage of its development so far as British coals are concerned, though it may have entered the full-scale unit stage in its application to other raw materials.

Preliminary work in connection with processes for obtaining liquid fuel from coal by synthesising alcohols and hydrocarbons from carbon monoxide and hydrogen is being carried out at the Fuel Research Station; and investigations on these lines are also proceeding at the Chemical Research Laboratory, Teddington. Professors Wheeler and Nash at Sheffield and Birmingham Universities respectively are also studying the conversion of water gas into hydrocarbons.

Power Alcohol

Other investigations which are proceeding deal with metallurgical coke, internal combustion engines, and domestic heating. As regards power alcohol, work on the hydrolysis of pentosans and the fermentation of pentoses was continued at the Royal Naval Cordite Factory. Activities have been mainly devoted to the improvement and simplification of the hydrolysis of the pentosans of grasses, straws, etc., and to the fermentation of the pentoses. The results were satisfactory, and a process has been evolved. The process for the hydrolysis of pentosans and the fermentation of pentoses has now been practically worked out so far as it is possible to do so on an intermediate-scale plant and in this country. Further development must proceed, if at all, in places where suitable raw material is available in bulk.

A questionnaire was addressed to the Dominions, Colonies, and Protectorates asking for information as to the nature and quantities of grasses and waste vegetable materials that might be available for the manufacture of power alcohol in the event of a cheap and simple process becoming available as the result

of the experimental work at the Royal Naval Cordite Factory. It would appear from the replies that there are few places where large supplies of either grasses or suitable waste materials are suitably available.

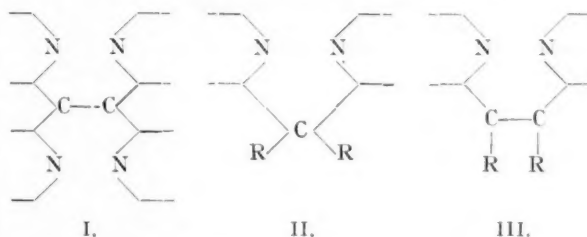
The general inquiry and research that has been undertaken by the Fuel Research Division, has given no indication that power alcohol can be made in this country from waste materials at a price comparable to that of petrol. In view of these and other considerations and of the unfavourable reports as to supplies of suitable raw materials mentioned above, it has been decided that further expenditure on this research would not, for the present, be justified, and the work at Holton Heath on the production of power alcohol has been discontinued since March 31, 1927.

Russian Research on Chlorophyll

Interesting Recent Results

PARTS 1-4 of Volume 59 of the *Journal of the Russian Chemical Society*, covering a total of 357 pages, contain 31 original articles which are of the usual high standard. Parts 1-2 also give a summary of the present position of the Society, showing a total membership of 417, which corresponds to an increase of 143 for the year under review. The exchange list of scientific journals shows that 37 internal and 81 foreign ones, mainly German, are being received by the Society.

Special reference must be made to a paper by B. V. Tronow and P. P. Popov (pp. 327-332) from the Siberian University at Tomsk. This paper is one of a series of publications by Tronow and his collaborators, the first of which appeared in 1916. These investigations aim at the syntheses of chlorophyll and hæmoglobin. Tronow is making a systematic study of the preparation of compounds having the general structure I, which is the main skeleton of these two substances.



Tronow has been able to show that even the simplest compounds having the general structures II and III, where R is either the CH_3 or the C_6H_5 radicle, already exhibit the typical reactions of ætioporphyrin, the common disintegration product of chlorophyll and hæmoglobin. To judge from these investigations Tronow is well on the way towards being able to claim for Siberia in years to come the syntheses of chlorophyll and hæmoglobin; this would be one of the greatest achievements of organic chemistry.

United States Cresylic Acid Duty

A REDUCTION of 50 per cent. in the duty on cresylic acid is recommended by United States Tariff Commission in a report sent to President Coolidge. It is expected that it will be some time before President Coolidge acts on the report on cresylic acid. He is expected to refer it to at least two departments for comment before taking action. This report has been pending for several years. A decrease was asked from the present rate of 40 per cent. *ad valorem* plus 7 c. per pound on the American selling price.

The Making of a Chemical

A NEW book of great interest to chemists, "The Making of a Chemical: a Guide to Works Practice," is announced by Ernest Benn, Ltd. The primary object of the book is to give to works chemists a guide to the principles of efficiency in works practice and to correlate the practical problems which they are called upon to face with the academic knowledge which they have already acquired. A copy on three days' approval without obligation to purchase may be obtained on application.

Hexyl Resorcinol Patent Action

Judgment for the Defendants

THE case of Sharpe and Dohme, Inc., v. Boots Pure Drug Co., Ltd. (of which a report has been given in our last three issues) was concluded in the Chancery Division of the High Court on Tuesday, when judgment was given by Mr. Justice Astbury for the defendants.

At the end of Dr. Marshall's re-examination the evidence for the defendants was closed, and Mr. Justice Astbury stated that he would not at that time call upon the defendants to sum up their case. Sir Arthur Colefax's closing speech for the plaintiffs lasted for the greater part of Thursday and during Friday and Monday, when he dealt with the various legal authorities he considered relevant, and read the minutes of evidence which, in his opinion, proved his case. On Friday (the fifteenth day of the hearing) he brought forward the plaintiffs' construction of the patent, which was to the effect that it was a patent primarily for the manufacture of new germicides.

Mr. Stafford Cripps, in a final speech of over two hours' duration, said that in order to prove that there was no subject matter the defendants must show, firstly, that, with a degree of probability amounting to certainty, the prior publications indicated that the substances could in fact be prepared, and, secondly, that the publications proved conclusively that the substances would have the special germicidal properties claimed. As to the first point, he invited the Court to study the evidence of the four eminent chemists who had been called, and also to look at the internal evidence of the documents themselves; in neither case would that degree of certainty be found. As to the second point, he said that no witness could speak with certainty of the properties of unknown substances. He finally emphasised the plaintiffs' construction of the specification.

Terms of the Judgment

Without calling on the defendants, Mr. Justice Astbury proceeded to give judgment. He said that the sole issue was whether the patent was valid; if so, the defendants had infringed, but the case involved a question as to "subject matter" which, so far as he was aware, had never been directly decided by the Courts. He did not express a direct opinion as to whether the alleged invention was for the production of substances of high therapeutic value, although he had previously expressed his dissent from that view. The patent was not limited even to the preparation of alkyl resorcinols up to the *n* hexyl body, but was for all the higher homologues. The first claim was for a general reaction for their preparation, and no particulars of quantities or other details were given except for the four lower specific instances. The plaintiffs appeared to think no further information need be given to the world.

He had examined the prior documents at some length. The plaintiffs contended that there was so little, if any, prevision in chemistry that no chemist prior to the date of the patent could even know that the new bodies could exist. It was true that no one could in every case know for certain that the bodies existed or that the processes worked. The plaintiffs, he thought, made a great deal too much of what they called research. If they carried out a process a man had told them to try, was that research? was that invention? He thought not.

The real issue in the case was whether the prior publications left any inventive step for the plaintiffs to take. The defendants denied this, and he thought the evidence bore them out. The published statements plainly indicated the processes which should be carried out if higher alkyl resorcinols than those already made were required. The plaintiffs' witnesses said that these statements required verification, that it was research to prove that what a man said was true, but a patent could not be given for that, and that such statements, if verified, referred only to the bodies which were actually made.

Dealing with the cited publications, the Judge indicated that Clemensen said that his process had never failed, and provided a method, in conjunction with Nencki's condensation, for preparing alkyl phenols; he had proved his process to be equally applicable for the introduction of short and long alkyl chains. The paper was a complete disclosure of the principle underlying the plaintiffs' alleged invention.

Johnson and Lane, in the title of their paper, showed it

dealt with the preparation of some alkyl derivatives of resorcinol and the relation of their structure to antiseptic properties, and in the paper they stated that the facts they were investigating should be useful in directing the search for new and more valuable antiseptics, and that they had purposely selected the less toxic resorcinol for their starting point. The plaintiffs had argued that the conception of satisfying a public demand for non-toxic antiseptics was patentable; the conception was due to Johnson and Lane. These authors, again, had found it necessary for their research to prove that their *n* butyl resorcinol was free from the *iso* body; it had never occurred to them to doubt that if the *iso* acid were present in their reagents the *iso* derivative would have been prepared. Then, so far as the antiseptic properties were concerned, the authors had plainly stated that antiseptic value depended upon length of the alkyl chain. Could the plaintiffs take out a patent for proving that Johnson and Lane's conclusions were right? He thought not.

Dr. Marshall (of Messrs. Boots), when faced with the preparation of hexyl resorcinol, knew that the body existed, and was not required to verify the truth of Johnson and Lane's paper but, differing only in those respects from the plaintiffs, he had made hexyl resorcinol without any difficulty.

He failed to see the relevance of the many legal authorities cited; in no previous case had there been anything approaching to the disclosures of the prior documents in this case. It was not necessary that the documents should amount to absolutely definite information; all that was necessary for the defendants' case was that the documents should be such as to make unnecessary an inventive act on the part of any one following their directions. He considered that a patent was too great a reward for merely verifying the work of others; if such patents were valid, it would be a very serious matter indeed for chemical industry.

The Judge held that the patent was invalid, and awarded costs to the defendants on the higher scale.

Merchandise Marks Act, 1926

Definition of "Uncompounded Drugs"

IN reply to an inquiry for a clear definition of "Uncompounded Drugs," mentioned in the Exemption Order recently issued, the Board of Trade have advised the British Chemical and Dyestuffs Traders' Association as follows:—

"With reference to your letter of June 30 regarding the order exempting certain drugs from Section I of the Merchandise Marks Act, 1926, I am directed to state that the word 'uncompounded' in the order should be construed in the pharmaceutical and not in the chemical sense. The order exempts such drugs as senna pods, castor oil and aspirin in bulk. It does not apply to any medicinal preparation. In the event of a legal question arising as to whether a particular drug is or is not an uncompounded drug for the purposes of the order, the Courts would doubtless have regard to the evidence of the trade, and in that connection the evidence of the pharmaceutical organisations would doubtless carry considerable weight.

"As regards the second paragraph of your letter, I am to say that the order as made was designed to meet the representations of your Association so far as possible. The Board are advised that if any uncompounded drugs which fall within the exemption are sold by wholesale merchants for medicinal purposes an indication of origin need not be given. While you will appreciate that it is impossible for the Board to express a definite opinion, they are disposed to think that a sale by one of your members to a manufacturing chemist would be regarded as *prima facie* evidence that the articles are sold for medicinal purposes."

In a note on the last paragraph of the Board's letter the Association state:—"In all cases where sales wholesale are made of a pharmaceutical product to a firm who is recognised as a 'manufacturing chemist,' it is correct to assume that the product sold will be used for medicinal purposes. So far as wholesale trading is concerned, the Board's statement relieves merchants of responsibility in any instances where a pharmaceutical product is used for a purpose other than medicinal, provided it is sold to 'manufacturing chemists' or to a similar class of trading concern. It will be seen from the Board's statement 'the order exempts such drugs as senna pods, castor oil and aspirin in bulk,' that the interpretation to be given to 'uncompounded drugs' is particularly wide.

The Oxygen Receiver Accident at Adswood

IN answer to a question by Col. Day (House of Commons, July 19), the Under-Secretary of State for the Home Department, Captain Hacking, stated that the circumstances of the accident in an oxygen receiver at the Bolton Superheater Works, Adswood, had been carefully investigated by the Factory Department. Their report showed that it was caused by the clothing of the two unfortunate men catching fire when they were inside the receiver. There was no sign, however, of any explosion, and it had not been possible to obtain any definite evidence as to how the fire originated. Inquiry would be made into the practice in other works where similar plant was in use, with a view to considering what precautions were necessary to prevent any such accident in future. This was the first case of the kind that had come to the notice of the Department.

In reply to a further question, Captain Hacking drew attention to the coroner's summing up, in which he said it was clear from the facts that one of the unfortunate victims had received no instructions to go inside the receiver; and it was not necessary, it was understood, for the men to enter the receiver in order to carry out the work entrusted to them.

Record Rush for the B.I.F.

A RECORD rush for space in next year's British Industries Fair is reported by the organisers of both the London and Birmingham sections. Within five weeks of the sending out of application forms, bookings of space in the White City have reached 100,000 (one hundred thousand) square feet—twice the figure

for the same period last year—and the Department of Overseas Trade has now despatched a letter to manufacturers who have not yet applied, reminding them that space cannot be guaranteed after July 30.

With the letter is an attractive new booklet giving particulars of the stands that can be obtained, completely fitted, from £12 upwards, and pointing out that early application for space not only helps to secure a satisfactory allotment, but makes possible the publication of an advance list of exhibitors, which is issued to over 50,000 buyers.

The Fair will be held simultaneously in London and Birmingham from February 20 to March 2.

Award of the Beit Fellowships

THE trustees of the Beit Fellowships have elected the following to fellowships tenable at the Imperial College of Science and Technology, London, for two years, of the value of £250:—Mr. Israel Vogel, B.Sc., M.Sc., D.I.C., Neil Arnot Scholar and Metallist in Chemistry, University of London, 1924; London County Council Senior Scholar; educated at the Foundation School, London, 1919-22; East London College, 1922-25; Imperial College, 1926 to date. During the tenure of his fellowship Mr. Vogel will continue his studies on ring formation, in the organic chemistry laboratories.—Mr. Kenneth Vivian Thimman, B.Sc., A.R.C.S., A.I.C., Frank Hutton Prizeman, 1924; educated at Caterham School, 1915-21; Imperial College, 1921 to date. His researches as a Fellow on the effect of electrical currents on proteins will be carried out in the biochemistry department.

Fifth Bouverie House Tour

A Visit to a Norman Church

Two or three acres of land which can boast some of the richest historical associations in London were in the itinerary of the fifth tour arranged for readers of THE CHEMICAL AGE by the publishers, Benn Brothers, Ltd., on Tuesday afternoon, when Mr. Allen S. Walker conducted a party to the Priory Church of St. Bartholomew the Great and the famous "Bart's" Hospital. In the inimitable style which Mr. Walker has made familiar in his broadcast talks, he pointed out the Elizabethan half timber house, which occupies the site of the old north tower, the raised burial ground where the victims of the Plague were hastily covered over, and the site of the Cloisters where lived the Black Canons. Inside the church, the perfect Norman chancel and semicircular apse of 1123 was admired as the visitors sat in the choir and heard the history of the founding of the church and the hospital by Rahere in the twelfth century. The recent discoveries in the excavated

cloisters, and the restoration work was inspected, and the party then visited the hospital, going up the fine eighteenth century staircase to the great Governors' Hall with its two-tiered windows, French plaster ceiling and paintings of the founder and of famous surgeons. Visits were also paid to the Parish Church of St. Bartholomew the Less, to the site of the old Bartholomew Fair, and to Pye Corner at the corner of Cock Lane, where ended the Great Fire of London; and, over the teacups in the staff dining room at Bouverie House, Mr. Walker related the story of the famous Cock Lane ghost, which was laid by Dr. Johnson.

Letters received from members of the previous parties express the great pleasure they derived from the afternoon, and their eagerness to secure places in the future tours, for which application should be made to the Editor of THE CHEMICAL AGE. The next tour will be to the Charterhouse on Wednesday, July 27, and to the Central Criminal Courts on Wednesday, August 3.



THE VISITORS AT ST. BARTHOLOMEW'S THE GREAT.

Efficient Use of Low Grade Fuels

Some Recent Examples

THE application of scientific principles to steam generation has had one very important result, the more efficient utilisation of all kinds of low grade fuels, with the plant so arranged that the cheapest material from the point of view of cost per unit of heat can be used irrespective of the quality, especially the ash and moisture content.

Two recent cases of a reduction in the coal bill on these lines with small industrial boiler plants come from Australia. A set of "turbine" forced draught furnaces was recently installed on the boiler of Henderson's Spring Works, Kensington, Melbourne, being a large 8 ft. diameter, internally fired, return tube, cylindrical marine type, operating at 100 lb. per sq. in., without economisers, and with feed water at 70° F. The essential results of three detailed tests with the "Turbine" furnace, using "Shovel" coke at 33s. per ton, are an evaporation per day (8½ hours) of 41,500 to 42,600 lb. of water and the consumption of 4,384 to 4,535 lb. of coke, corresponding to an evaporation of 10.99 to 11.16 lb. of water from and at 212° F. per 1 lb. of coke.

Before these furnaces were installed the arrangement was ordinary bars with a steam blast underneath to try to improve the draught, using Newcastle coal at 44s. per ton, the results averaging 9.97 to 10.84 lb. of water, from and at 212° F. per lb. of coal. The furnaces have therefore saved under the conditions obtaining in Melbourne about 27½ per cent. in the fuel bill, and these figures are likely to be improved, since coke breeze is also to be utilised.

The other example is an installation of the furnace at the Commonwealth Board Mills, Ltd., Abbotsford, burning raw lignite direct. This has a "Babcock and Wilcox" water tube boiler of 18,000 lb. evaporation per hour, with a grate 12 ft. wide by 6 ft. 6 in. deep, being originally fired with oil. Since the furnaces have been fitted, raw "run of mine" lignite, often with 60-65 per cent. water, is being used with great success, resulting in a great saving. Incidentally, it may be mentioned that during the recent coal troubles several thousand tons of German lignite were burnt on these lines in a London boiler plant, the secret being to keep a very thick fire, easily possible because of the forced draught, and to use the poker as little as possible.

British Industries Fair

Chemical Associations Invited to Help

ALL the leading associations in the chemical industry, including the Association of British Chemical Manufacturers, have received a letter from Mr. A. M. Samuel, Parliamentary Secretary to the Department of Overseas Trade, calling attention to the British Industries Fair, 1928, and particularly to the Chemical Section at the White City.

"The Chemical and Allied Industries now provide one of the most important sections of the Fair and the Section attracts greater attention each year from visitors," Mr. Samuel writes. "The success achieved in recent years and particularly last year, moreover, has already induced a number of firms to consider participation for the first time in 1928. I am trying this year to make the Section thoroughly representative in all branches, and I ask for the co-operation of your Association, particularly in the direction of securing new participants."

It is pointed out that some applications for space in the London section of the Fair of 1927 had to be refused owing to lack of accommodation. For that reason arrangements have been made to provide 100,000 sq. ft. of additional space for 1928, 1929, and 1930. Publicity literature and methods have been completely overhauled and, with the help of H.M. Trade Commissioners, commercial diplomatic officers, and consular officers all over the world, an analytical examination has been made of lists of overseas buyers, the number of whom, consequently, should be even greater than the record total at the 1927 Fair.

"The Fair which was instituted in a small way in 1915," Mr. Samuel concludes, "has grown from year to year and has now established itself. With the continued support of the great commercial organisations, it will become increasingly valuable in helping the sale of British goods."

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

66 (Sulphonated Oils).—"Could you give me the address of a firm manufacturing sulphonated oils? I believe there is a sulphonated lard oil for use as a lubricant in knitting artificial silk. The preparation mixes direct with water and forms a milky white emulsion ready for use."

British Oxygen Co.'s Annual Meeting

THE forty-first ordinary general meeting of the British Oxygen Co., Ltd., was held in London on Thursday, July 14. The chairman, Mr. K. S. Murray, stated that ever since the termination of the coal strike there had been a marked and steady increase in the output of oxygen, and, as the state of the company's business was a very good indication of the general trend of almost every branch of the engineering trade, their experience certainly afforded grounds for general optimism. On several occasions recently their weekly sales of oxygen had considerably exceeded the highest previously recorded output, and that fact pointed to two conclusions: First, the small effect which competition had had upon the company's hold on the oxygen business, and second, the remarkable relation between output and cost of production, for, when the full output of large modern oxygen plants could be disposed of in either cylinders or pipe lines, oxygen could be profitably sold at very low prices. If these facts had been better understood by people who thought it was only necessary to set up a rival oxygen factory in order to establish a lucrative trade, less money would have been wasted in competitive enterprises.

The chairman claimed that prevailing conditions confirmed the wisdom of the company in establishing district oxygen factories of their own. These he considered would continue to be the main source of the company's revenue, although they were by no means neglecting the business of supplying private plants to customers.

In conclusion, he stated that on the engineering side of the company's business as well as on the oxygen side the prospects for the current financial year were distinctly encouraging. Amongst other work they had completed several oxygen plants for the Government and private firms at home and abroad, which had been put into successful operation during the year, whilst they had other contracts of a similar nature in hand. Although the year had been the worst and most anxious which the company had experienced since the war, he certainly felt more cheerful about the prospects of the company than on previous occasions. The report was unanimously adopted.

Salt Production in Canada

SALT production in Canada continues to increase; the high record of 233,746 tons produced in 1925 was topped by a new high mark of 262,547 tons in 1926, according to final statistics just issued by the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics at Ottawa. This year's output value was reported at \$1,480,149 as compared with \$1,410,697 for the 1925 production. The average price for all grades declined somewhat, being \$5.63 per ton in the year under review, as against \$6.04 in 1925. Imports of salt into Canada were recorded at 188,401 tons appraised at \$1,036,594. Exports of Canadian salt amounted to 1,164 tons valued at \$19,423.

The 11 companies operating in Canada during 1926 reported a capital investment in plant, inventories and working capital of \$2,782,728. Salaried employees numbering 51 and wage-earners to a total of 333 were engaged in this industry during the year. The salaries and wages paid amounted to \$482,651. Fuel costs accounted for an outlay of \$307,093 while the electric power consumed added \$17,519 to the total operating expenditures. Bituminous coal was the largest item among the fuels consumed amounting to 54,177 tons at \$280,249. Steam engines employed numbered 30 with a rating of 752 h.p. The 56 electric motors in use during the year were rated at 711 h.p.

From Week to Week

DR. J. V. N. DORR, president of the Dorr Co., U.S.A., is now in England.

MR. W. MURRAY MORRISON, general manager of the British Aluminium Co., has been made a director of that company.

MR. D. MAXWELL BUIST, A.M.I.E.E., has been appointed chief electrical engineer to Synthetic Ammonia and Nitrates, Ltd., and took up his duties on July 1.

▼ LORD COLWYN has been elected a member of the board of Imperial Chemical Industries. He is a director of the British Dyestuffs Corporation, of the Dunlop Rubber and other companies, and served on many Government committees.

L. F. WILL AND CO., chemical merchants, Prinsengracht, 417, Amsterdam, have changed their address to 2^e Weteringplantsoen, 3. The post box number and telegraphic address remain the same; phone numbers, 36417 and 35071.

THE TERM "SYNTHETIC SILK" will, in view of the opposition of the British Silk Association, no longer be used by the Bemberg Co. on the English market, when artificial silk is intended. It is stated that it was on the initiative of the American Patent Office that the term was first adopted by the company.

THE GODO SYNTHETIC OIL AND GLYCERIN CO. is to be absorbed by the Japan Artificial Fertiliser Co. Fifty-one thousand shares in the Godo company are held by Suzuki Shoten and will be bought up by the fertiliser company. A chemical company will be formed according to a plan drawn up by the fertiliser company.

THE DUNLOP CO. OF ENGLAND and the Dunlop Rubber Co. of Australia have entered into a provisional arrangement for the financial association of the two companies and the closest possible technical and commercial alliance. The arrangements include the sale of a number of shares to the English company, and the formation of a New Zealand company, jointly owned, for the better development of trade in that dominion.

THE CENTENARY of the birth of Sir Frederick Abel, the famous chemist, occurred on Sunday, July 17. He was one of the twenty-six original students of the Royal College of Chemistry. Most of his original work related to explosives. With Dewar, he invented cordite. He occupied at various times the positions of president of the Chemical Society of London, of the Institution of Electrical Engineers, of the Iron and Steel Institute, and of the British Association. He also acted as Chemist to the War Office. His death occurred in 1902.

AN EXPERIMENTAL INQUIRY into the value of colloidal lead compounds (Dr. Blair Bell's remedy) in the treatment of cancer is being carried out at the Birmingham General Hospital and the University of Birmingham. The work is partly chemical, partly experimental on animals, and partly clinical. Mr. Saunders, of Birmingham, a research chemist who is assisting in the work, has succeeded in preparing other colloidal compounds of lead, which may prove to be more stable and less toxic than the Blair Bell preparation.

A SLIGHT INCREASE in the wages of about 100,000 Yorkshire dyeworkers will be made on the first pay day in August as a result of the cost of living showing an increase of one point, compared with the position in April. It is of interest to note that this will be the last occasion that provision will be made for including the Mackenzie award in the quarterly wage revision, as, according to the agreement made in April between the Allied Association of Bleachers, Dyers, Printers, and Finishers and the Joint Dyers' Executive, the award will be withdrawn on the first pay day in November, after having been paid for three years.

DR. E. N. MOTTRAM, who has been engaged in research work in chemistry for three years at Manchester University, has been missing from home since Monday afternoon. Twenty-seven years of age, Dr. Mottram has gained the M.Sc. and B.Sc. degrees, and for several years has held the Sir Clement Roysds Scholarship, which is financially the most valuable award in chemistry offered by Manchester University. His tenure of the scholarship ended a few weeks ago. Dr. Mottram's father thinks that his son's disappearance is due to loss of memory. Three months ago he suffered a breakdown, and recently has been working very hard.

APPLICATIONS ARE INVITED for the following appointments: Angas Professor of Chemistry in the University of Adelaide, South Australia. £1,100. The Agent-General for South Australia, Australia House, 112, Strand, London. October 1.—Second Assistant (for chemical work) to the Director of the Clinical Laboratory, Manchester Royal Infirmary. The General Superintendent and Secretary. July 28.—Professor of Chemistry in the University of Melbourne, Australia. £1,200. The Agent-General for Victoria, Victoria House, Melbourne Place, Strand, London. October 1.—Research Fellows in the Department of Glass Technology of the University of Sheffield. The Registrar. August 6.—Research Fellowships for work on textiles or any problem having a bearing on wool, in chemistry and other sciences. The Secretary, British Research Association for the Woollen and Worsted Industries, Torridon, Headingley, Leeds. July 31.

SIR ALFRED MOND has been elected president of the Chemical and Allied Employers' Federation.

THE BOARD OF TRADE JOURNAL has now changed its address to New Government Buildings, New George Street, London, S.W.1.

HERR H. VON RIEDEMANN, director of the Deutsch-Amerikanischen Petroleumgesellschaft, has been elected to the directorate of the Standard Oil Co.

DR. J. C. DRUMMOND, professor of Biochemistry at University College, London, delivered a lecture on "Vitamins" to members of the American Chemical Society on Friday.

THE LIBRARY OF THE CHEMICAL SOCIETY will be closed for stock-taking from Monday, August 1, until August 13, inclusive, and will close each evening at 5 o'clock from August 15 to September 10.

DR. H. H. DALE, F.R.S., head of the Department of Biochemistry and Pharmacology of the Medical Research Council, has been appointed a member of the advisory board of the Beit Memorial Fellowship Trust.

G. H. RICHARDS, LTD., of Borough High Street, London, inform us that they have purchased the goodwill of Hensman Brothers, of Horncastle, and the sole right to manufacture Kamforite and the compound manures formerly made by that firm.

MEMBERS OF THE SOUTHERN SECTION of the Coke Oven Managers' Association were entertained to dinner at Cardiff last week by the directors of Wilton's Chemical Engineering Co. Prior to the dinner the party were conducted through the Grangetown works of the Cardiff Gas Co.

THE SIR EDWARD FRANKLAND MEDAL and prize (ten guineas) for students of the Institute of Chemistry will be awarded in January, 1928, for the best essay, not exceeding 3,000 words, on "The Importance of Chemistry to the Welfare of the People." Entries are limited to students who are less than 22 years of age at the time of forwarding the essay, which must be sent in on or before December 31. Enquiries on the subject may be addressed to the registrar of the Institute.

MR. SAMUEL COURTAULD has given £40,000 for the establishment, at the Middlesex Hospital, London, of an Institute of Bio-chemistry, of which he laid the foundation stone on Wednesday. The new building is in Union Street, and arrangements on all floors are being made in accordance with the wishes of the Director, Dr. E. C. Dodds. Prince Arthur of Connaught presided at the laying of the stone, and Sir John Bland-Sutton delivered an address on "Bio-chemistry in relation to Medicine."

A "CAREERS" PAMPHLET issued by the Faculty of Science of the University of Birmingham states that, "on the whole the tendency at present is to divert those students who have put their names down for chemistry and physics towards other branches of science—chemistry, in particular, being in danger of becoming a congested subject, unable to provide a living for all men who are being trained in it. Only the very best, it is pointed out, may feel sure of obtaining a place after graduating; the market for chemists would seem to be overstocked."

UNIVERSITY NEWS.—*Cardiff*: Mr. H. A. Perkins, of Sevenoaks, near Bridgend, a former chemistry student at Cardiff College, was last week appointed lecturer in pharmaceutical chemistry of the college.—*Manchester*: The Manchester Education Committee on Monday agreed to a resolution of the Joint Committee of Recommendation which recommended the appointment of Dr. James Kenner, professor of organic chemistry, Sydney University, as professor of technological chemistry in the Manchester University of the Manchester College of Technology.

Obituary

MR. SAMUEL COLQUHOUN, analytical chemist at Cartvale Chemical Works, suddenly at Riverton, Paisley, on July 16.

MR. CHARLES F. RAND, aged 70, a past-president of the American Institute of Mining and Metallurgical Engineering, on June 21 in New York.

PROFESSOR VICTOR LENHER, professor of analytical and inorganic chemistry at Wisconsin University and a noted research worker in the chemistry of selenium and tellurium, on June 12, aged 54.

GEHEIMRAT PROFESSOR ALBRECHT KOSSEL, at Heidelberg, aged 73. Well-known for his researches on physiological chemistry and hygiene, he was director of the Institute of Protein Research at Heidelberg.

PROFESSOR CHARLES FREDERIC MAYBERY, on June 26, aged 77. Professor Maybery was a well-known authority on the chemistry of petroleum, and he also did much work on the constitution and derivatives of furfural. His petroleum researches were commenced in 1887, after he had become professor at the Case School of Applied Science in Cleveland, and were continued after his retirement in 1911.

DR. HENRY PAUL TALBOT, Dean of Massachusetts Institute of Technology, on June 18, in his sixty-fourth year. Dr. Talbot had been on the faculty of the Institute since 1885 and Dean since 1921. In 1917 he was a member of the Advisory Board of the United States Board of Mines, and during the war helped to organise the chemical resources of the U.S.A. to meet problems arising from gas warfare.

References to Current Literature

British

- GENERAL.—The dissociation of carbon dioxide at high temperatures. R. W. Fenning and H. T. Tizard. *Proc. Roy. Soc. A.*, July 1, pp. 318-333.
- Acid soaps: a crystalline potassium hydrogen dioleate. J. W. McBain and A. Stewart. *J. Chem. Soc.*, June, pp. 1392-1395.
- An atomic model for the chemist. F. Langworthy. *Chem. News*, July 15, pp. 34-37.
- The development of the synthetic nitrogen industry in Great Britain. G. P. Pollitt. *J.S.C.I.*, July 15, 1927, pp. 291-295T.
- ORGANIC.—Sugar carbonates. III. Derivatives of γ -methylfructoside, γ -ethylfructoside, and normal methylfructoside. C. F. Allpress, W. N. Haworth, and J. J. Inkster. *J. Chem. Soc.*, June, pp. 1233-1236.
- Recent advances in our knowledge of starch. A. R. Ling. *J.S.C.I.*, July 8, pp. 279-281T.
- Structural relationships in the carbohydrate group. W. N. Haworth. *J.S.C.I.*, July 15, pp. 295-300T.
- Intermediary carbohydrate metabolism. C. G. Lambie. *J.S.C.I.*, July 15, pp. 300-302T.
- Researches in the menthone series. Part IV. Isomenthols and isomenthones. J. Read, G. J. Robertson, and A. M. R. Cook. *J. Chem. Soc.*, June, pp. 1276-1283.
- A process for the dehydration of alcohols. E. L. Smith. *J. Chem. Soc.*, June, pp. 1288-1289.
- The action of halogen substituted phenylhydrazines upon dehydroxy-tartaric acid. F. D. Chattaway and W. G. Humphrey. *J. Chem. Soc.*, June, pp. 1323-1327.
- PETROLEUM.—The separation of the components of petroleum. Part V. Edge filtration. Part I. The isolation of waxes from untapped crude oil without hydrolysis. P. F. Gordon and A. C. Marshall. *J.S.C.I.*, June 15, pp. 304-306T.
- PHASE RULE.—The system lead chloride-lead iodide-water. A. L. M. Sowerby. *J. Chem. Soc.*, June, pp. 1337-1342.
- PHYSICAL.—The calculation of the equivalent conductivity of strong electrolytes. I. Aqueous solutions. II. Application to data at 0°, 18°, and 26° C. A. Ferguson and J. Vogel. *Phil. Mag.*, July, pp. 233-242.

United States

- ADSORPTION.—Adsorption from solutions by ash-free adsorbent charcoal. IV. The non-inversion of sucrose by adsorbed acids and its significance for theories of adsorption and catalysis. E. J. Miller and S. L. Bandemer. *J. Amer. Chem. Soc.*, July, pp. 1686-1697.
- The effect of inorganic salts on the adsorption of inorganic acids and bases. L. R. Parkes and P. G. Bartlett. *J. Amer. Chem. Soc.*, July, pp. 1698-1709.
- ANALYSIS.—A micro-method for the determination of pentoses and pentosans. C. P. Sherwin, G. J. Shipley and A. R. Rose. *J. Biol. Chem.*, June, pp. 599-606.
- On tyrosine and tryptophane determinations in proteins. O. Folin and V. Cicalteu. *J. Biol. Chem.*, June, pp. 627-650.
- Determination of urea by gasometric measurement of the carbon dioxide formed by the action of urease. D. D. Van Slyke. *J. Biol. Chem.*, pp. 695-724.
- Data on the assay of rolled gold plate. R. Gilchrist. *Ind. Eng. Chem.*, July, pp. 827-829.
- GENERAL.—The colour of silver chromate. F. Bush. *J. Phys. Chem.*, June, pp. 931-932.
- ORGANIC.—Recent advances in the determination of the structure of proteins. E. Klarmann. *Chem. Reviews*, May, pp. 51-107.
- On the isoelectric precipitation of pepsin. F. Fenger and R. H. Andrew. *J. Biol. Chem.*, June, pp. 371-378.
- Extraction of maltose from yeast. V. K. Kriebel, E. L. Shaw, and E. W. Lovering. *J. Amer. Chem. Soc.*, July, pp. 1728-1734.
- Researches on the mercapto-thiazoles. I. J. Teppema and L. B. Sebrell. *J. Amer. Chem. Soc.*, July, pp. 1748-1758.

Researches on thiazoles. II. The nitration and reduction of 2-mercaptobenzthiazole and its substituted derivatives. *Ibid.*, pp. 1779-1785.

Some bromine derivatives of pentadecanoic and hexadecanoic acids. R. Marchant, J. N. Wickert, and C. S. Marvel. *J. Amer. Chem. Soc.*, July, pp. 1828-1830.

The phenol fusion. F. H. Rhodes, D. W. Jayne, and F. H. Bivins. *Ind. Eng. Chem.*, July, pp. 804-806.

German

- ANALYSIS.—The question of the analytical applicability of carbon determinations in the wet way. II. Determination of chlorine, bromine, iodine, and nitrogen in the presence of carbon in organic substances in the wet way. B. Lustig. *Biochem. Z.*, June 9, pp. 349-354.
- Notes on cobalt thiocyanate as a microchemical reagent. J. Gregor. *Biochem. Z.*, June 9, pp. 438-441.
- CELLULOSE.—The colloid chemistry of viscose solutions. IV. Gel formation. T. Mukoyama. *Kolloid Z.*, June, pp. 180-183.
- X-ray examination of a commercial sample of acetyl cellulose. W. Jancke. *Kolloid Z.*, June, pp. 186-187.
- GENERAL.—The reactions of the ferrous ion with dimethylglyoxime. E. J. Kraus. *Z. Anal. Chem.*, Vol. 71 (5 and 6), pp. 189-190.
- The reciprocal action between iodine and starch. S. W. Gorbatscheff and E. N. Winorgadowa. *Z. physik. Chem.*, June, pp. 93-107.
- The action of colloidal and semi-colloidal iron oxide on aqueous gelatine solutions. III. R. Wintgen and M. Vöhl. *Kolloid Z.*, June, pp. 140-147.
- Weighing powdered substances in air and in vacuo. E. Zintl and J. Goubeau. *Z. anorg. u. allg. Chem.*, June 28, pp. 105-119.
- The effect of plasticising on the mechanical elastic properties of plastic artificial and natural materials. II. Artificial resins. O. Manfred and J. Obrist. *Kolloid Z.*, June, pp. 174-179.
- INORGANIC.—The composition of commercial calcium hypochlorite and its behaviour on heating as compared with bleaching powder. H. Ditz and R. May. *Z. Elektrochemie*, July, pp. 265-272.
- Electrolytic formation of crystals. V. Kohlschütter and A. Good. *Z. Elektrochemie*, July, pp. 272-308.
- Fundamental atomic weights. III. Revision of the atomic weight of silver. Analysis of silver nitrate. Atomic weight of potassium. Analysis of potassium chloride. O. Honigschmid, E. Zintl, P. Thilo, and J. Goubeau. *Z. anorg. u. allg. Chem.*, June 28, pp. 65-104.
- The equilibrium between the hydrates of calcium sulphate. D. Balarew. *Z. anorg. u. allg. Chem.*, June 28, pp. 137-140.
- The question of the solubility of the natural half hydrate of gypsum after heating to different temperatures. A. J. Zworykin. *Z. anorg. u. allg. Chem.*, June 28, pp. 178-184.
- French
- ESSENTIAL OILS.—New observations on the determination of the total alcohol in citronella oil. J. Dupont and L. Labaune. *Chimie et Ind.*, June, pp. 905-908.
- GENERAL.—Study of gases at high and low pressures. R. Petit. *L'Ind. Chim.*, June, pp. 247-252.
- Adsorption and superficial electric charge. I. Metallic oxides. P. Bary. *Rev. Gen. des Colloïdes*, April-May, pp. 517-522.
- Studies on the surface and adsorption phenomena at the surface between two liquid phases. R. Dubrisay. *Rev. Gen. des Colloïdes*, April-May, pp. 533-539.
- INORGANIC.—Manufacture of titanium white (cont.). H. Briday. *L'Ind. Chim.*, June, pp. 242-244.
- Development of the manufacture of sulphuric acid by the lead chamber process in recent years (cont.). De Jussieu. *L'Ind. Chim.*, June, pp. 253-256.

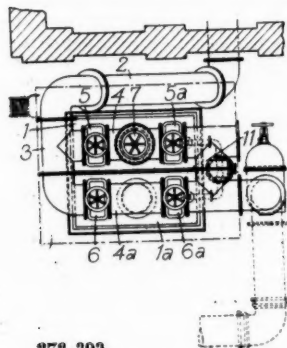
Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

272,293. CONDENSERS FOR USE IN THE RECOVERY OF BY-PRODUCTS ARISING IN THE CARBONISATION OF COAL AND THE LIKE. D. A. Henshaw, Whitestone Iron Works, Huddersfield, Yorks. Application date, March 11, 1926.

This apparatus comprises an arrangement of valves for use with a condenser for the treatment of fuel gases in a pair of



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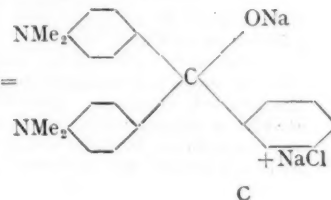
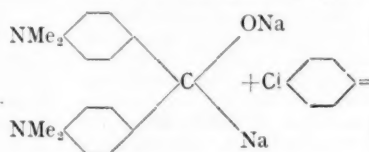
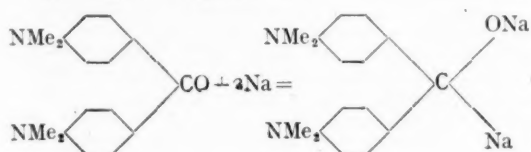
towers through which the gases flow in series. The condenser is divided into two vertical chambers, 1, 1a, which are illustrated in plan, and gas is supplied through a main 2 to a breeches pipe 3, the two limbs of which contain gate valves 5, 5a, and 6, 6a, while a screw-down valve 7 is provided between one pair of gate valves and controls the passage to one of the chambers. The two limbs 4, 4a are connected by a pipe 11. When the valves 5, 6a, and 7 are opened, gas passes downwards through the chamber 1 and upwards through the chamber 1a and the valve 6a to the outlet main. When valves 5, 6a, and 7 are opened, gas passes downwards through chamber 1a and upwards through chamber 1 to pipe 11 and the outlet main. Both chambers may be by-passed if all the valves are open.

272,567. DERIVATIVES OF DIOXY DIAMINO-ARSENOBENZENE, MANUFACTURE OF SOLUTIONS OF. S. R. MacEwen, 58, Glenholme Avenue, Toronto, Canada. Application date, December 17, 1925.

The process is for the preparation of solutions of the arsenical drugs known as arspenamine, neoarsphenamine, sulpharsphenamine, etc., and which are derivatives of dioxy-diamino-arsenobenzene, more particularly solutions of sodium dioxydiamino arsenobenzene methanal sulphonylate and disodium-dioxy-diamino-arsenobenzene. The object is to obtain solutions which will keep for long periods without developing toxicity, and the solution of the drug in water is mixed with one or more sugars and a soluble salt of a phospho-acid such as the acid phosphates, phosphites, or hypophosphites. Suitable additions are pure dextrose and sodium acid phosphate. Sufficient alkali may be added to make the solution neutral or slightly acid.

272,321. TRIARYLMETHANE DYES, NEW PROCESS FOR PREPARING. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, E. H. Rodd and F. W. Linch, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, April 17, 1926.

Diaryl ketones such as Michler's ketone ($\text{NMe}_2\text{C}_6\text{H}_4$)₂CO is usually condensed with secondary and tertiary aromatic amines containing an active hydrogen atom in the para-position to the amino group. The ketone is usually first treated with phosphoryl chloride or some similar agent to obtain the ketone chloride. A reaction has now been found by which a wide range of dyestuffs can be obtained from diaryl ketones. The ketone is combined with sodium and then treated with an aromatic compound containing halogen such as chloro benzene according to the equations:

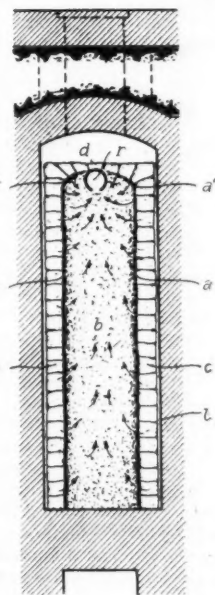


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The ketone may first be combined with sodium and then with a halogen compound, or the ketone may preferably be treated with sodium in the presence of the halogen compound. The product is then treated with acid to obtain the dyestuff, which in the case of Michler's ketone and chloro-benzene is identical with malachite green. If tetraethyl-diamino-benzophenone is employed, brilliant green is obtained. The reaction is preferably carried out in a solvent which may be the halogen compound or preferably an inert solvent such as an aromatic hydrocarbon. New dyestuffs as well as known dyestuffs can be obtained by this reaction, and tetra-alkyl-diamino-benzophenones can be condensed with halogenated benzenes, toluenes, xylenes, alkoxybenzenes, dialkyl-anilines and homologues, naphthalenes, diphenyls, etc. In an example *p*:*p*'-tetramethyl-diamino-benzophenone is dissolved in toluene, mixed with chlorobenzene and sodium, and the mixture heated to 85° to 90° C., until the sodium is absorbed, which takes about six to eight hours. Toluene and chlorobenzene are distilled off with the steam, and the residue treated with dilute hydrochloric acid to extract the *p*:*p*' tetramethyl-diamino-triphenyl-carbinol. The dyestuff can be isolated as the double chloride with zinc chloride. The colour is identical with malachite green. An example is also given of the production of brilliant green, and the production of dyestuffs from *p*:*p*'-tetra-ethyl-diamino-benzophenone α - or β -chloro-naphthalene and sodium; Michler's ketone, *o*-chlorotoluene or 4-toluene-*m*-xylene and sodium; and Michler's ketone, *p*-chloro-diethyl-aniline and sodium.

272,375. DISTILLATION OF SOLID FUELS. C. Still, 2-4, Bismarckplatz, Recklinghausen, Germany. Application date, October 20, 1926.

In the distillation of coal in a vertical retort there are two layers *a* in which the coal is plastic, parallel to the two heating



272,375

walls, and as the coking proceeds these two layers approach one another and finally meet in the centre of the retort. On the inner side of these layers the unaltered coal is below 100° C., and on the outer side the coke is at a high temperature up to 1,000° C., and is permeated by horizontal and vertical fissures. The shrinkage of the charge causes a narrow space *i* to be left along the retort walls. It has been found that the plastic layers *a* offer great resistance to the passage of the gases, and as the gases in space *b* are specifically heavier than the gases, including hydrogen and ammonia, in the space *c* there is an excess pressure from the interior outwards. This excess pressure causes the distillation gases to pass through the leaky portions of the layer *a* into the highly heated space *c* where they are converted into carbon and permanent gases of little value. In this invention, a horizontal suction tube *r* is placed in the coal charge near its upper surface *d*, and is provided with a slot or openings for the gases along its lower

periphery. At the beginning of the distillation the hot gases rising from space *c* into the free space at the top of the retort are drawn downwards through the upper layer into the tube *r* in which suction is maintained. The upper layer of the charge thus becomes coked and is bounded internally by a plastic layer. All the vapours distilled in the space *b* are then drawn into the tube *r* so that decomposition is avoided, and the yield of benzol hydrocarbons is considerably increased. The impervious nature of the layer *a* renders it necessary to maintain a much lower pressure than usual in the draw-off tube *r*, so that the ammonia generated in the space *c* is drawn into the space *b* instead of passing upwards through the space *c* and a higher yield of ammonia is thus obtained.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—247,582-7 (I.G. Farbenindustrie Akt.-Ges.), relating to hydrocarbons and derivatives from coal, etc., see Vol. XIV, p. 461-2; 247,588 (I.G. Farbenindustrie Akt.-Ges.), relating to emulsions, see Vol. XIV, p. 482; 247,941 (Gelsenkirchener Bergwerks Akt.-Ges.), relating to cast iron with finest graphite distribution, see Vol. XIV, p. 39 (Metallurgical Section); 248,766 (I.G. Farbenindustrie Akt.-Ges.), relating to azo dyestuffs, see Vol. XIV, p. 527; 249,519 (G. Patart), relating to liquid hydrocarbons from heavy organic materials, see Vol. XIV, p. 551; 250,948 (I.G. Farbenindustrie Akt.-Ges.), relating to hydrocarbons from mineral oils and bitumens, see Vol. XV, p. 34; 252,713 (L. Casale), relating to synthetic alcohols, etc., see Vol. XV, p. 164; 253,118 (I.G. Farbenindustrie Akt.-Ges.), relating to substituted aromatic sulphonic acids, see Vol. XV, p. 185; 254,302 (I.G. Farbenindustrie Akt.-Ges.), relating to preventing oxidation of magnesium, etc., see Vol. XV, p. 31 (Metallurgical Section); 254,713 (I.G. Farbenindustrie Akt.-Ges.), relating to hydrogenation of coal, oils, etc., see Vol. XV, p. 279; 255,429 (A. Meiro), relating to extraction of crystals from anthracene, etc., see Vol. XV, p. 307; 259,188 (E. Alberti, H. Thielmann, M. Begas, R. Alberti, K. Alberti), relating to obtaining zinc from zinc-iron-silicious slags, see Vol. XV, p. 548; 260,225 and 264,520 (I.G. Farbenindustrie Akt.-Ges.), relating to phosphorus, phosphoric oxides and acid, see Vol. XVI, pp. 29 and 317; 267,074 (A. Meiro), relating to distillation of coal tar, etc., see Vol. XVI, p. 449; 262,075 (I.G. Farbenindustrie Akt.-Ges.), relating to cobaltous acetate, see Vol. XVI, p. 143; 268,316 (M. N. Lacell), relating to magnesium, see Vol. XVI, p. 516.

International Specifications not yet Accepted

270,711. CHROMYL CHLORIDE. Permutit Akt.-Ges., 30, Luisenstrasse, Berlin. International Convention date, May 5, 1926.

Chromyl chloride is produced by the action of chlorosulphonic acid, phosphorus pentachloride or oxychloride, pyrosulphuric acid chloride, antimony, tin, titanium or silicon chloride, on chromic acid, chromates, alkali bichromates, or mixtures of acid chromates with excess of chromic acid in the presence of concentrated sulphuric acid, phosphoric acid, carbon tetrachloride, or ethylene tetrachloride as a diluent. A mixture of sulphur trioxide or fuming sulphuric acid and hydrochloric acid may be used to form the chlorosulphonic acid *in situ*.

270,729. SYNTHETIC DRUGS. Chemische Fabrik Auf Actien, vorm. E. Schering, 170, Mullerstrasse, Berlin. International Convention date, May 5, 1926.

Amino-metal-mercapto-sulphonic acids or salts are treated with sodium formaldehyde bisulphite to obtain *N*-methylsulphites of amino-metal-mercapto-sulphonic acids. The preparation of β -amino- α -auromercapto-ethane-sulphonic acid is described, and its use in the above reaction.

270,764. CROTON ALDEHYDE. Elektrizitätswerk Lonza, Basle, Switzerland. (Assignees of E. Luscher, Basle, Switzerland.) International Convention date, May 8, 1926.

Acetaldehyde is mixed with dilute aqueous caustic alkali solution in such quantity that when the product is neutralised by sulphuric or phosphoric acid no precipitate is produced. The operation is conducted in an atmosphere of nitrogen, and the products containing aldol and acetaldehyde are fractionated in an atmosphere of nitrogen. The proportion of caustic alkali employed is about 0.01—0.02 per cent. Croton aldehyde is obtained, and some examples are given.

271,037. CONDENSATION PRODUCTS OF FORMALDEHYDE WITH UREA, THIOUREA, ETC. Kunsthazfabrik Dr. F. Pollak Ges., 85A, Mollardgasse, Vienna. International Convention date, May 15, 1926.

A dilute solution of the condensation product of formaldehyde with urea or thiourea is treated with flocculating agents such as acids, acid salts, acid esters, ammonium salts, hydrogen peroxide, bases and basic salts which split off hydroxyl ions, albuminoid precipitants such as phosphotungstic acid and natural or artificial tanning agents, to obtain a white powder which can be made homogeneous by heat and pressure. The powder is insoluble in water and common solvents, but soluble in acids, hot formaldehyde, and high-boiling solvents containing a hydroxyl group such as glycerin, chlorhydrins, and benzyl alcohol. The product may be mixed with various fillers, etc., to obtain substitutes for rock crystal, porcelain, glass, amber, etc. In an example, urea is boiled with formaldehyde solution and boric acid added. The intermediate product is diluted with water and hydrochloric acid, formic acid, alum, or sodium hydroxide added. The precipitate is washed with water and spirit, and then dried.

271,044. CONCENTRATING VOLATILE ALIPHATIC ACIDS. Holzverkohlungs Industrie Akt.-Ges., Konstanz, Baden, Germany. International Convention date, May 17, 1926.

Formic acid, acetic acid, propionic acid, and other volatile acids are concentrated by distilling with sulphuric acid, sodium bisulphate, or mixtures of acids and salts, which do not react with the aliphatic acid but absorb the water forming a liquid having a boiling point slightly above that of the acid to be concentrated. The dehydrating acid, etc., may be added before distillation, or the distilled vapour may be brought into contact with the acid, etc., in a column. Raw pyroigneous acid can be treated in this manner, and if sodium bisulphate is employed as the dehydrating substance, the oily and tarry constituents can be removed before distillation. The acid is then distilled, and the vapour passed into a column charged with granular sodium bisulphate.

271,071. DETERGENTS, ETC. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, May 15, 1926.

Compositions having high wetting, cleansing, and emulsifying power for use in acid, neutral, or alkaline baths, or with hard water, comprise a sulphonic acid and materials having soap-like properties in colloidal form. Substances used include fatty acids, natural or artificial resins or resinous materials, paraffin wax, naphthenic acids, etc. Sulphonic acids used include sulphite cellulose liquor, aliphatic sulphonic acids, aromatic sulphonic acids, *e.g.*, those substituted by alkyl or aralkyl groups or hydroaromatic residues in the nucleus or in amino or other substituent groups, and artificial tanning materials. Solvents such as aliphatic or aromatic alcohols, ketones, and esters, and aliphatic, aromatic, or hydroaromatic hydrocarbons may also be used. In an example, olein is dissolved in methanol and mixed with isopropyl naphthalene sulphonic acid or its sodium salt.

271,073. DEVULCANISING RUBBER. J. Tengler, Tägerwilten, Kanton Thurgau, Switzerland. International Convention date, May 11, 1926.

Rubber is pulverised and heated under pressure with hydrogen naphthalene so that the sulphur is converted into hydrogen sulphide. A solvent is added to dissolve the rubber, and the naphthalene is removed by freezing.

271,085. TITANIUM COMPOUNDS. Titan Co. Fredriksstad, Norway. International Convention date, May 12, 1926.

Titaniferous solutions are hydrolysed by heating while continuously adding a heated solution already partly or wholly hydrolysed and withdrawing hydrolysed liquor so as to keep the total volume and the composition throughout the precipitation constant.

271,103. BUTYRALDEHYDE. Consortium für Elektrochemische Industrie Ges., 20, Zielstattstrasse, Munich, Germany. International Convention date, May 15, 1926.

Dry crotonaldehyde is treated at 90°–100° C. with hydrogen at 10–20 atmospheres pressure in the presence of a nickel-kieselguhr mixture containing 15 per cent. of nickel. This is prepared by precipitating nickel carbonate or oxide on kieselguhr, and reducing with hydrogen. The product is butyraldehyde.

- 271,440. ALKALI MANUFACTURE. A. F. Meyerhofer, 63, Talstrasse, Zurich, Switzerland. (Assignee of M. Buchner, Kleefeld, Hanover, Germany.) International Convention date, May 19, 1926.

A soluble fluoride is treated with barium, calcium, strontium, or magnesium hydroxide, yielding an insoluble fluoride and a soluble hydroxide. Calcium hydroxide for this purpose is obtained by treating burnt lime in granulated, powdered, or lump form with steam under pressure, and wind-screening or sifting the product.

LATEST NOTIFICATIONS.

- 274,023. Manufacture of ammonia. Soc. d'Etudes Minières & Industrielles. July 6, 1926.
- 274,048. Method of carrying out exothermic reactions in a continuous manner. I. G. Farbenindustrie Akt.-Ges. July 10, 1926.
- 274,058. Process for the manufacture of new amino-alkylamino derivatives of aromatic amino-oxy and polyamino compounds. I. G. Farbenindustrie Akt.-Ges. July 8, 1926.
- 274,072. Process for the preparation of a white pigment and the product obtained. Carteret, G. July 12, 1926.
- 274,076. Manufacture of concentrated acetic acid or of acetic anhydride with the simultaneous production of unsaturated hydrocarbons. Holzverkohlungs-Industrie Akt.-Ges. July 6, 1926.
- 274,095. Cyclic ketones. I. G. Farbenindustrie Akt.-Ges. July 8, 1926.
- 274,099. Process for the production of compounds of nitrogen and oxygen from ammonia. Caro, Dr. N., and Frank, Dr. A. R. July 8, 1926.
- 274,103. Manufacture of naphthalene-1:4:5:8-tetracarboxylic acid. I. G. Farbenindustrie Akt.-Ges. July 9, 1926.
- 274,104. Process for obtaining sulphonation products from fats, oils, or their acids. Böhme Akt.-Ges., H. T., and Bertsch, Dr. H. July 8, 1926.
- 274,122. Feeding materials into high-pressure vessels. I. G. Farbenindustrie Akt.-Ges. July 10, 1926.
- 274,128. Manufacture of azo-dyestuffs. I. G. Farbenindustrie Akt.-Ges. July 9, 1926.
- 274,130. Manufacture of new dyestuffs. Soc. of Chemical Industry in Basle. July 10, 1926.
- Specifications Accepted with Date of Application**
- 248,746. Aluminium ore, Extraction of. A. Finkelstein. March 2 1926.
- 249,800. Halogenated benzanthrone derivatives containing sulphur, Manufacture of. I. G. Farbenindustrie Akt.-Ges. March 27, 1925.
- 249,891. Condensation products of the benzanthrone series, and vat dyestuffs containing nitrogen, Manufacture of. I. G. Farbenindustrie Akt.-Ges. March 27, 1925.
- 255,818. Paraffin hydrocarbons with more than one carbon atom, Process for the production of. F. Fischer and H. Tropsch. July 21, 1925.
- 255,904. Active adsorbent and catalytic masses, Manufacture of. I. G. Farbenindustrie Akt.-Ges. July 27, 1925.
- 258,563. Dyestuffs, Manufacture of. Soc. of Chemical Industry in Basle. September 16, 1925. Addition to 237,375.
- 259,977. Iodopyridine, Process for the production of. A. Binz and C. Rath. October 17, 1925. Addition to 251,578.
- 263,186. Improving mineral oils and tar products, Process for. Siemens and Halske Akt.-Ges. December 19, 1925.
- 268,721. Exothermic chemical reactions under pressure and at a high temperature, Processes for carrying out. Soc. l'Air Liquide Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude. March 31, 1926.
- 269,118. Expelling the SO₂ gases from mixtures of SO₂ gases and oil, Method of. Allgemeine Ges. für Chemische Industrie. April 12, 1926.
- 273,346. Gold from sea water, Process for the extraction of. B. Stoces. December 23, 1925.
- 273,347. Dyestuffs intermediates. J. Thomas, H. A. E. Drescher, and Scottish Dyes, Ltd. December 24, 1925.
- 273,351. Refining mineral oils and/or their distillates, Process for. Burmah Oil Co., Ltd. (J. P. Fraser.) January 25, 1926.
- 273,352. Diazo preparations, Manufacture of. A. G. Bloxam. (I. G. Farbenindustrie Akt.-Ges.) January 25, 1926.
- 273,420. Hydrometallurgically treating oxide products of lead and zinc or oxidised lead ores containing zinc, or mixed oxidised or sulphide ores of lead and zinc, to obtain therefrom separate metals or concentrated products of lead or zinc, Process of. W. H. Corbould. April 13, 1926.
- 273,440. Refining and separation of metals. H. Harris. May 7, 1926.
- 273,493. Producing benzene by reaction between phenolic vapours and a reducing gas, Method of. A. Irinyi. July 8, 1926.
- 273,528. Distillation or heat treatment of carbonaceous or like materials. Salerno, Ltd., and E. M. Salerni. September 15, 1926.

Applications for Patents

- Baddiley, J. Manufacture of vat dyes. 18,943. July 16.
- Bradshaw, G. W., and Jackson, E. R. Apparatus for extraction of oils, fats, etc. 18,781. July 15.
- British Celanese, Ltd., Dreyfus, H., and Haney, C. I. Manufacture of aliphatic compounds. 18,661. July 14.
- British Celanese, Ltd., Dreyfus, H., and Haney, C. I. Manufacture of aliphatic compounds. 18,799. July 15.
- British Celanese, Ltd. Apparatus for textile processes. 18,915. July 16.
- British Dyestuffs Corporation, Ltd. Removal of free chlorine, etc., from fluid mixtures. 18,403. July 11.
- British Dyestuffs Corporation, Ltd., and Thornley, S. Vat dyes. 18,828. July 15.
- British Dyestuffs Corporation, Ltd., and Walker, E. E. Manufacture of condensation products of phenols. 18,829. July 15.
- British Dyestuffs Corporation, Ltd. Decomposition of substances by rapid heating. 18,942. July 16.
- British Dyestuffs Corporation, Ltd., Shepherdson, A., and Thornley, S. Manufacturer of vat dyes. 18,943. July 16.
- Bruce, M. J. H. Water-softening apparatus. 18,756. July 14.
- Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Process for manufacture of amino anthraquinones. 18,435. July 11.
- Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of water-soluble anthraquinone glycosides. 18,746. July 14.
- Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of finely divided iron oxide. 18,747. July 14.
- Chemische Fabrik auf Actien vorm. E. Schering. Process for manufacture of iodine substituted benzonitriles. 18,924. July 16. (Germany, August 2, 1926.)
- Compagnie de Bethume. Catalysts for synthesis of alcohols. 18,797. July 15. (France, July 17, 1926.)
- Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler. Process for production of alkali hydride. 18,850. July 15. (Germany, August 23, 1926.)
- Gofmann, M. Chemical process for welding of metals, etc. 18,706. July 14. (France, July 15, 1926.)
- Haller, P., and Kappeler, H. Manufacture of condensation products of arylamines. 18,936. July 16. (Switzerland, July 16, 1926.)
- Haynes, P. E. Manufacture of carbon dioxide. 18,824. July 15. (United States, September 27, 1926.)
- Henkel et Cie. Ges. Process of purifying chemicals. 18,494. July 12. (Germany, December 24, 1926.)
- I. G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of vat-dyestuffs. 18,545. July 12.
- I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of formaldehyde. 18,595. July 13.
- I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of organic liquids. 18,596. July 13.
- I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of gaseous hydrocarbons. 18,597. July 13.
- I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of condensation products from phenols, etc. 18,715. July 14.
- I. G. Farbenindustrie Akt.-Ges. Feeding materials into high-pressure vessels. 18,386. July 11. (Germany, July 10, 1926.)
- I. G. Farbenindustrie Akt.-Ges. Operation of internal combustion engines. 18,387. July 11. (Germany, July 13, 1926.)
- I. G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 18,430. July 11. (Germany, July 9, 1926.)
- I. G. Farbenindustrie Akt.-Ges. and Thaus, A. Manufacture of non-dyeing thio derivatives of phenols. 18,436. July 11.
- I. G. Farbenindustrie Akt.-Ges. Treatment of nitrate earths. 18,716. July 14.
- Oesterreichische Chemische Werke Ges. Manufacture of stable solutions of peroxides, etc. 18,623. July 13. (Austria, September 16, 1926.)
- Perl, J., and Smith, A. D. Treating heavy hydrocarbons. 18,542. July 12.
- Ruzicka, C., and Shuttleworth, J. W. W. Manufacture of cellulose esters. 18,753. July 14.
- Scottish Dyes, Ltd. Dyes, etc. 18,606. July 13.
- Silesia Verein Chemischer Fabriken. Process for oxidation of alkyl-aryl-substituted dithiocarbamic acids. 18,422. July 11. (Germany, October 30, 1926.)
- Silica Gel Corporation. Catalysing gaseous reactions. 18,549. July 12.
- Soc. Anon. Distilleries des Deux-Sèvres. Manufacture of crotonic aldehyde, etc. 18,743. July 14. (Belgium, July 14, 1926.)
- Soc. of Chemical Industry in Basle. Manufacture of dyestuffs. 18,432. July 11. (Switzerland, July 10, 1926.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton for home market, 1-cwt. drums included.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—8d. to 9d. per lb. Crude 60's, 2s. 4d. to 2s. 8d. per gall.
 ACID CRESYLIC 99/100.—2s. 8d. to 2s. 9d. per gall. 97/99.—2s. 1½d. to 2s. 4½d. per gall. Pale, 95%, 2s. to 2s. 3d. per gall. Dark, 1s. 9d. to 2s. 1d. per gall.
 ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.
 ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.
 BENZOLE.—Crude 65's, 11d. to 1s. per gall., ex works in tank wagons. Standard Motor, 1s. 9d. to 2s. 2d. per gall., ex works in tank wagons. Pure, 1s. 7d. to 2s. 6d. per gall., ex works in tank wagons.
 TOLUOLE.—90%, 1s. 8d. to 1s. 10½d. per gall. Firm. Pure, 2s. to 2s. 3½d. per gall.
 XYLOL.—2s. to 2s. 4d. per gall. Pure, 2s. 6d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6½d. to 8½d.; middle oil, 7½d. to 7½d. per gall. Heavy, 8½d. to 8½d. per gall. Salty, 7d. per gall. less 1½%.
 NAPHTHA.—Crude, 7½d. to 8d. per gall. according to quality. Solvent 90/160, 1s. 5d. to 1s. 6d. per gall. Solvent 95/160, 1s. 5d. to 1s. 6d. per gall. Solvent 90/190, 11d. to 1s. 4d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £7 10s. per ton. Whizzed or hot pressed, £8 10s. to £9 per ton.
 NAPHTHALENE.—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. per ton, according to districts.
 PITCH.—Medium soft, 80s. to 85s. per ton, f.o.b., according to district; nominal.
 PYRIDINE.—90/140, 7s. to 13s. per gall. Nominal. 90/180, 4s. 6d. to 5s. per gall. Heavy, 5s. to 8s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:
 ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 9d. per lb.
 ACID GAMMA.—4s. 9d. per lb.
 ACID H.—3s. 3d. per lb. 100% basis d/d.
 ACID NAPHTHIONIC.—1s. 6d. per lb. 100% basis d/d.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.
 ACID SULPHANILIC.—9d. per lb. 100% basis d/d.
 ANILINE OIL.—7½d. per lb. naked at works.
 ANILINE SALTS.—7½d. per lb. naked at works.
 BENZALDEHYDE.—2s. 3d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—4½d. per lb. Fair inquiry.
 m-CRESOL 98/100%.—3s. per lb. Only limited inquiry.
 p-CRESOL 32/34° C.—2s. 8½d. per lb. Only limited inquiry.
 DICHLORANILINE.—2s. 3d. per lb.
 DIMETHYLANILINE.—1s. 11d. per lb. d/d. Drums extra.
 DINITROBENZENE.—9d. per lb. naked at works. £75 per ton.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—11d. to 1s. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.
 B-NAPHTHYLAMINE.—3s. per lb. d/d.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 9d. per lb. d/d.
 NITROBENZENE.—6d. per lb. naked at works.
 NITRONAPHTHALENE.—1s. 3d. per lb. d/d.
 R. SALT.—2s. 2d. per lb. 100% basis d/d.
 SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
 o-TOLUIDINE.—7½d. per lb. naked at works.
 p-TOLUIDINE.—2s. 2d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8 10s. to £9 5s. per ton. Grey, £15 10s. per ton. Liquor, 9d. per gall. 32° Tw.
 CHARCOAL.—£6 15s. to £10 per ton, according to grade and locality.
 IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.
 RED LIQUOR.—9d. to 10d. per gall. 16° Tw.
 WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 9d. to 4s. per gall., 60% O.P. Solvent, 3s. 11d. to 4s. 3d. per gall., 40% O.P.
 WOOD TAR.—£4 to £5 10s. per ton and upwards, according to grade.
 BROWN SUGAR OF LEAD.—£40 15s. to £41 10s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
 BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
 CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.
 CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPONE, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBPRON".—£13 12s. 6d. per ton, f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.
 ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
 ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 6d. per lb.
 ACID, BENZOIC B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

ACID, BORIC B.P.—5 cwt. lots Crystal, 41s. per cwt.; powder, 45s. per cwt. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 8d. to 1s. 10d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P.—1s. 3½d. to 1s. 6d. per lb.; Technical.—11½d. to 1s. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 3½d. per lb., less 5%. Firm market.

AMIDOL.—9s. per lb., d/d.

ACETANILIDE.—1s. 6d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—8s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed: 1s. per lb.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—6s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. to 10s. per lb.

BISMUTH CITRATE.—9s. 6d. to 9s. 9d. per lb.

BISMUTH SALICYLATE.—8s. 9d. to 9s. per lb.

BISMUTH SUBNITRATE.—7s. 9d. to 8s. per lb.

BISMUTH NITRATE.—5s. 9d. to 6s. per lb.

BISMUTH OXIDE.—13s. 9d. to 14s. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. to 12s. per lb.

BISMUTH SUBGALLATE.—7s. 9d. to 8s. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 11½d. per lb.

BORAX B.P.—5 cwt. lots, Crystal, 25s. per cwt.; powder, 27s. per cwt. according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 11d. per lb.; sodium, 2s. 4d. per lb.; ammonium, 2s. 4d. per lb.; granulated ½d. per lb. less; all spot.

CALCIUM LACTATE.—1s. 3½d.

CHLORAL HYDRATE.—3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—Prices for Winchester quarts; dozen Winchester quarts; carboys or drums; and 10 cwt. lots respectively: 730—1s. 2½d.; 1s. 2d.; 1s. 1½d.; 1s. 0½d.; 720 technical—1s. 5½d.; 1s. 5d.; 1s. 4½d.; 1s. 3½d.; 720 pur. (Aether B.P., 1914)—2s. 4d.; 2s. 3½d.; 2s. 3d.; 2s. 2d.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—5s. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 1 lb., 16s. per doz.; ½ lb., 9s. 6d. per doz.; ¼ lb., 6s. 6d. per doz.

HYDROQUINONE.—2s. 11d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—4d. per lb., 22s. per cwt.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 6d. per lb. net; Synthetic detached crystals, 11s. 6d. to 14s. 6d. per lb., according to quantity; Liquid (95%), 12s. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 9d. per lb.

METHYL SULPHONAL.—9s. 6d. to 9s. 9d. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—2s. 9d. to 3s. per lb.

PHENAZONE.—4s. 3d. to 4s. 6d. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—100s. per cwt. less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. for 1000 oz. lots in 100 oz. tins.

RESORCIN.—3s. 9d. to 4s. per lb., spot.

SACCHARIN.—55s. per lb.; in quantity lower.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. per lb. for 1 cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—92s. 6d. to 97s. 6d. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—6s. 6d. to 6s. 9d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 2d. per lb.

THYMOL.—Puriss., 10s. 6d. to 10s. 9d. per lb., according to quantity. Firmer. Natural, 15s. per lb.

Perfumery Chemicals

ACETOPHENONE.—6s. 6d. per lb.

AUBEPINE (EX ANETHOL), 10s. 6d. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 3d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—17s. per lb.

COUMARIN.—10s. per lb.

CITRONELLOL.—13s. 9d. per lb.

CITRAL.—8s. 6d. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—9s. per lb.

GERANIOL (PALMAROSA).—18s. 6d. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 18s. 6d. per lb. Ex Shui Oil, 14s. 6d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—4s. 6d. per lb.

PHENYL ETHYL ACETATE.—10s. 6d. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—32s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 8d. per lb.

VANILLIN.—17s. to 18s. per lb.

Essential

ALMOND OIL.—11s. per lb.

ANISE OIL.—3s. per lb.

BERGAMOT OIL.—28s. per lb.

BOURBON GERANIUM OIL.—14s. 9d. per lb.

CAMPHOR OIL.—70s. per cwt.

CANANGA OIL, JAVA.—26s. per lb.

CINNAMON OIL LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—8s. 3d. per lb.

CITRONELLA OIL.—Java, 85/90%, 1s. 11d. per lb. Ceylon, pure, 1s. 9d. per lb.

CLOVE OIL.—6s. per lb.

EUCALYPTUS OIL, 75/80%.—2s. 3d. per lb.

LAVERANDER OIL.—Mont Blanc, 38/40%, Esters, 22s. 6d. per lb.

LEMON OIL.—8s. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—10s. 6d. per lb.

OTTO OF ROSE OIL.—Anatolian, 30s. per oz. Bulgarian, 70s. per oz.

PALMA ROSA OIL.—10s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 18s. per lb. Japanese, 8s. per lb.

PETITGRAIN OIL.—7s. 9d. per lb.

SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95% 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, July 21st, 1927.

THERE is very little of interest to report in the market this week, and trade continues somewhat quiet owing to lack of demand in some of the chief consuming districts. Export trade, on the other hand, has been somewhat better, and there is quite a good demand in the field.

General Chemicals

ACETONE.—Unchanged at £62 per ton, ex store.
ACID ACETIC.—Market is moderately active at £37 to £38 per ton, for 80% grade.
ACID CITRIC is a fair market at 1s. 8d. per lb., less 5%.
ACID FORMIC is very firm, and the demand is good at £47 per ton, for 85%.
ACID LACTIC.—A fair amount of business continues, and price is very firm at from £42 to £43 per ton, for 50% by weight, for pale quality.
ACID OXALIC.—Price unchanged at £28 to £30 per ton, but only a small demand.
ALUMINA SULPHATE is in fair request, price unchanged.
AMMONIUM CHLORIDE.—A fair business has been reported in this article, and it is quoted at about £19 per ton for 98/100%, fine quality.
ARSENIC is unchanged.
BARIUM CHLORIDE.—Only a small demand, but price keeps very steady at £9 per ton on the spot.
COPPER SULPHATE is unchanged at round about £23 per ton, and only a small business is reported.
FORMALDEHYDE remains in good demand at £40 to £41 per ton.
LEAD ACETATE is extremely firm, and demand is good at £43 per ton for white, and £1 per ton less for brown.
LEAD NITRATE is unchanged at £39 per ton.
METHYL ACETONE is firm and somewhat short in supply at about £60 to £62 per ton.
POTASSIUM CHLORATE is unchanged.
POTASSIUM PERMANGANATE is firm at 7½d. per lb., demand poor.
POTASSIUM PRUSSIAN is quiet at from £60 to £63 per ton according to quantity, but the demand leaves a good deal to be desired.
SODIUM ACETATE is firmer at about £18 15s. to £19 per ton.

SODIUM BICHRIMATE is unchanged at British makers' figures.
SODIUM CHLORATE.—A fair business is reported and price is about 2½d. per lb.
SODIUM HYPOSULPHITE is unchanged at British makers' figures. Demand poor.
SODIUM NITRITE.—A fair demand and business is reported at round about £19 10s. to £20 per ton.
SODIUM PHOSPHATE continues in good request at £12 10s. to £13 per ton.
SODIUM PRUSSIAN.—Price is quoted at nominally 4½d. per lb., with only a small demand.
SODIUM SULPHIDE is quietly steady with price unchanged.
ZINC SULPHATE.—A fair business is reported and price is firm at round about £14 per ton.

Coal Tar Products

The market values of coal tar products continue unchanged and there is little business passing.
90's BENZOL.—There is little demand, and it is quoted at 1s. 2½d. to 1s. 3d. per gallon, on rails, while the motor quality can be bought at 1s. 2d. per gallon.
PURE BENZOL is worth about 1s. 8d. to 1s. 9d. per gallon, on rails.
CREOSOTE OIL is firmer for spot delivery, the price on rails in the North being 7½d. per gallon, while the price in London is 8½d. to 9d. per gallon.
CRESYLIC ACID remains firm, and the pale quality 97/99% is very scarce for prompt delivery. It is quoted at 2s. 3d. to 2s. 4d. per gallon, on rails, while the dark quality 95/97% is worth about 1s. 10d. per gallon.
SOLVENT NAPHTHA is quiet, and very little business is being done. It is worth about 10½d. to 11d. per gallon, on rails.
HEAVY NAPHTHA is also very quiet, and the price remains unaltered, at 11d. per gallon, on rails.
NAPHTHALENES.—There is a continued demand for all qualities. For the 74/76 quality prices tend to become firmer at about £6 10s. to £6 15s. per ton. The 76/78 quality is quoted at about £8 to £8 10s. per ton, but supplies are scarce for the near position.
PITCH is unchanged. The price remains 80s. to 85s., f.o.b. U.K. ports.

Latest Oil Prices

LONDON, July 20.—LINSEED OIL dull and 5s. to 7s. 6d. lower. Spot, ex mill, £32 10s.; July, £31 5s.; August, £31 7s. 6d.; September-December, £32; January-April, £32 10s. RAPE OIL inactive. Crude extracted, £43; technical refined, £45, naked, ex wharf. COTTON OIL quiet. Refined common edible, £41; Egyptian crude, £35; deodorised, £43. TURPENTINE firm at 1s. advance. American, spot, 41s. 3d.; August, 41s. 6d.; September-December, 42s. 9d. per cwt.

HULL.—LINSEED OIL.—Naked. Spot to August, £32 12s. 6d.; September-December, £32 10s. COTTON OIL.—Naked Egyptian crude, £33 10s.; edible refined, £37 15s.; technical, £37 10s.; deodorised, £39 15s. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £37 10s. GROUND-NUT OIL.—Crushed/extracted, £43; deodorised, £47. SOYA OIL.—Extracted, £33; deodorised, £36 10s. RAPE OIL.—Crude/extracted, £43; refined, £45 per ton net cash terms, ex mill. CASTOR OIL and COD OIL unaltered.

Nitrogen Products

Export.—During the last week the demand for sulphate of ammonia has been satisfactory, and the price has been steady, ranging from £9 1s. 6d. to £9 3s. 6d., f.o.b. U.K. port, in single bags. It is understood that the continental producers have been selling large quantities to their European neighbours, and that stocks of sulphate of ammonia in all countries are fairly low.

Home.—As British producers have not yet announced their fresh prices, there is little interest in the home market, only small lots being purchased for immediate consumption.

Nitrate of Soda.—On account of the lower prices for sulphate of ammonia, the nitrate market has weakened and prices are now 16s. 3d./16s. 6d. per metric quintal f.a.s. Chile. It is reported that sales, since free selling commenced, have now reached 1,000,000 tons. However, much of this is undoubtedly speculative buying, and the material will remain on the market. Production in Chile for June has shown an increase of over 10,000 tons. Further oficinas are expected to operate shortly, but the low prices of sulphate of ammonia may have a retarding effect.

Canada's Production of Abrasives

IN recognition of the growing importance of the abrasive industry, and the many inquiries received concerning the uses, sources of supply, preparation and markets of the numerous minerals and materials included under the description of abrasives, the Dominion Department of Mines has made an investigation resulting in a series of bulletins embracing the subject in all its phases. The report is being issued in four parts, Part III of which has just been published. This Bulletin deals with garnet, and is by Mr. V. L. Eardley-Wilmot, of the Mines Branch. Up to the present, there has been very little collected information on Canadian sources of supply of garnet, although brief references to, and descriptions of isolated deposits appear in the numerous Government reports and other periodicals. The Bulletin contains a brief description of the principal deposits, production, and methods of treatment, and copies may be obtained by persons interested on application either to the Department of Mines at Ottawa, or to the Natural Resources and Industrial Information Branch, Canadian Building, Trafalgar Square, London, S.W.1.

Solvents in Italy

DISTILLERIE ITALIANO, the most important Italian sugar manufacturers and alcohol distillers, have given particular attention to the recovery of carbon dioxide gas and to the manufacture of bicarbonate of soda. Up to the present, Italy has been entirely dependent on imports of bicarbonate of soda, and last year domestic bicarbonate of soda from the Sesto San Giovanni plant of Distillerie Italiano was put on the market for the first time. The plant is to be expanded and the company expects to increase its production during the current year. Distillerie Italiano has also begun to manufacture a number of solvents at Sesto San Giovanni. Last year they put on the market ethyl, butyl, and amyl acetates and formates as well as special solvents for cellulose esters.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, July 20, 1927.

LOCAL holidays having now commenced, business in the heavy chemical market is practically at a standstill. There are no changes in prices of any importance to record.

Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quantity and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton; powder, £36 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Now quoted 8d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Quoted 1s. 7d. per lb., less 5%, ex store, for English material. Continental on offer at 1s. 8d. per lb., less 5%, c.i.f. U.K. ports.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80%.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC.—Still in good demand and price unchanged at 3d. per lb., ex store, spot delivery. Offered from the Continent at 2½d. per lb., ex wharf.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Unchanged at 1s. 4d. per lb., ex wharf. In good demand.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Lump quality on offer from the Continent at £8 2s. 6d. per ton, c.i.f. U.K. ports; powdered, 2s. 6d. per ton less; lump on spot on offer at £9 2s. 6d. per ton, ex store.

AMMONIA ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of English manufacture quoted £23 to £24 per ton, ex station. Continental material on offer at about £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £18 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Spot material unchanged at about £18 15s. per ton, ex store. Offered for prompt despatch from mines at £17 10s. per ton, ex wharf.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £7 2s. 6d. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers, £8 per ton, ex station, minimum 4 ton lots. Spot material, 10s. per ton extra. Continental on offer at £7 10s. per ton, ex wharf.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station with a slight concession for contracts. Continental quoted £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—Continental material unchanged at about £24 per ton, ex wharf. British material now quoted £24 per ton, f.o.b. U.K. ports.

FORMALDEHYDE 40%.—Unchanged at £38 per ton, c.i.f. U.K. ports. Spot material quoted £39 5s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material unchanged at £31 15s. per ton, ex store.

LEAD, WHITE.—Quoted £32 5s. per ton, ex store.

LEAD ACETATE.—White crystals offered from the Continent at £42 7s. 6d. per ton, c.i.f. U.K. ports; brown, about £40 5s. per ton, c.i.f. U.K. ports; white crystals offered on spot at about £43 15s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

POTASH, CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15 ton lots. Under 15 ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15 ton lots. Under 15 ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £27 5s. per ton, ex wharf, early shipment. Spot material on offer at about £28 10s. per ton, ex store.

POTASSIUM CHLORATE.—Powdered quality on offer at £24 5s. per ton, c.i.f. U.K. ports; crystals, £2 per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 12s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £21 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIAN (YELLOW).—Now quoted 7d. per lb., ex store, spot delivery. Offered for prompt shipment at a fraction less.

SODA CAUSTIC.—Powder, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton and 70/72%, £14 10s. per ton, carriage paid station, minimum 4 ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—English material quoted £21 10s. per ton, ex store. Continental on offer at £17 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store, minimum 4 ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment. Pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4 ton lots.

SODIUM NITRITE, 100%.—Quoted £19 15s. per ton, ex store.

SODIUM PRUSSIAN (YELLOW).—Offered for prompt shipment from the Continent at 4½d. per lb., ex wharf, spot material on offer at 4½d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Prices for English material as follows:—60/62%, solid, now £10 10s. per ton; broken, £11 10s. per ton; flake, £13 5s. per ton; crystals, 31/34%, £7 10s. per ton to £8 5s. per ton according to quality delivered your works, minimum 4 ton lots on contract. Prices for spot delivery 5s. per ton higher for solid, 2s. 6d. per ton for crystals. Offered from the Continent at about £9 5s. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £11 per ton; rock, £11 per ton; floristella, £10 per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material on offer at about £10 10s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Intermediates

NITRO NAPHTHALENE.—1s. 3d. per lb., small inquiries.

ANTHRANILIC ACID.—6s. per lb. Some inquiries.

N.W. ACID.—4s. 9d. per lb. Some inquiries.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100%. Some inquiries.

ORTHO TOLUIDINE.—8d. per lb. Fair inquiries.

ORTHONITRANILINE.—6s. per lb. Small inquiries.

Franco-German Dyestuff Co-operation

PLANS for co-operation between the French dye industry and the I.G. are believed to be well advanced, states the Berlin correspondent of the *Financial Times*, and as negotiations between the I.G. and the Standard Oil group are progressing satisfactorily, the belief in the formation of a world chemical trust is thought in Germany to be justified. The I.G. denies the rumours that negotiations have been, or are being, conducted between it and the Royal Dutch Shell Co. concerning the liquefaction of coal at Heidelberg or Ludwigshafen. On the other hand, it was admitted that negotiations between the I.C.I. and the I.G. are so advanced that a scheme for future co-operation is already drawn, and only awaits final revision.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, July 21, 1927.

SEASONAL influences are responsible to some extent for limiting the amount of business in chemical products that is being done on the Manchester market. When the holiday season approaches its end and market conditions resume their normal aspect a beneficial effect on the chemical trade should be observed. As things are, the demand during the past week from home users has been on moderate lines at, on the whole, a steady range of prices. Export inquiry is quiet.

Heavy Chemicals

The demand for bicarbonate of soda has been on the quiet side but prices are maintained at £10 10s. per ton. Saltcake has attracted a little attention though business in this section is still slow; values, however, are fairly steady at about £3 12s. 6d. per ton. Phosphate of soda is in moderate request with current quotations at from £12 10s. to £12 15s. per ton. Caustic soda still moves off in fair quantities at firm prices, these ranging from £14 10s. to £16 10s. per ton, according to strength. Offers of bichromate of soda are on the basis of 3d. per lb. but the demand for this during the week has been on a moderate scale. In the case of nitrate of soda some inquiry has been reported at firm prices, up to £19 10s. per ton being quoted here. Bleaching powder is in quiet demand with values unchanged at round £8 per ton. Alkali also is fully maintained at £6 15s. per ton and sales in this section are up to their recent level. Prussiate of soda, however, meets with a relatively slow demand at about 4½d. per lb. Chlorate of soda is still on the quiet side and values are easy at from 2½d. to 2¾d. per lb. Some inquiry for hyposulphite of soda is reported at £16 5s. per ton for the photographic material and £9 12s. 6d. for the commercial. Glauber salts are unchanged at about £3 10s., but buying interest remains quiet. Only a limited business is passing in sulphide of soda, but quotations are fairly steady at £11 5s. to £11 10s. per ton for the 60-65 per cent. concentrated solid and £8 10s. per ton for the commercial. With a quiet trade being done in the case of permanganate of potash quotations seem steady, with the B.P. quality offering at round 6½d. per lb. and the commercial grade at 5½d. Inquiry for yellow prussiate of potash shows little or no improvement and values are easy at from 6½d. to 6¾d. per lb. Bichromate of potash is moving off in moderate quantities and prices are steady at 4½d. per lb. Chlorate of potash continues in slow demand and at 3½d. per lb. offers still lack strength. A fair trade is being transacted in carbonate of potash at steady prices, from £27 to £27 10s. per ton being quoted for this material. Caustic potash also is a firm section of the market at round £31 per ton and moderate sales are being effected.

Slightly more interest is now being taken in arsenic and values are a shade steadier at about £15 10s. per ton at the mines for white powdered, Cornish makes. Actual business in acetate of lime is rather slow, but with offers on a relatively small scale values are steady at £15 10s. per ton for grey and £8 10s. for brown. Acetate of lead is in quiet demand but little alteration in price levels can be reported, white still offering at round £43 per ton and brown at about £40 10s. With regard to nitrate of lead inquiry is slow and quotations are easy at from £38 to £38 10s. per ton. Sulphate of copper remains steady and in moderate demand for shipment at about £25 10s. per ton, f.o.b.

Acids and Tar Products

Both tartaric and citric acids remain very firm sections of the market, although there is no great weight of business being done in either case: up to 1s. 3½d. per lb. is now being quoted for tartaric and from 1s. 7d. to 1s. 7½d. per lb. for citric. Acetic acid maintains its steadiness and the demand is on a fair scale, with glacial on offer at £66 10s. per ton and 80 per cent. commercial at £37. Oxalic acid is held at round 3d. per lb. but inquiry for this is still of limited extent.

Pitch is attracting rather more attention on forward account and values are firm at about £4 5s. per ton, f.o.b. Creosote oil is also well held at about 7½d. per gallon and buying interest in this is maintained. Carbolic acid is still rather slow, but prices are steady at 2s. 4d. per gallon for crude and about 8½d. per lb. for crystals. Solvent naphtha is weak and inactive at from 1s. 1d. to 1s. 2d. per gallon.

Viscount Chetwynd's Claim

THE claim of Viscount Chetwynd for an award for improvements in the manufacture of amatol and the filling of high explosive shells again came before the Royal Commission on Awards to Inventors, on Tuesday. Mr. Whitehead, for Viscount Chetwynd, resumed his address in statement of claim. He said that difficulties were found in sealing shells of large calibre, and during a visit to France Viscount Chetwynd saw devices which gave him ideas for overcoming those difficulties. There were also difficulties in handling large shells, and Viscount Chetwynd, again as the result of what he saw in France, designed an eye-bolt closing plug, to which a tommy bar could be attached. Millions of shells had been handled by all sorts of men in all sorts of circumstances, and nobody had ever thought of this closing plug before.

Counsel agreed with Mr. Justice Tomlin there was nothing original in this, but said that in a standard case in patent jurisprudence the House of Lords decided that bringing together two things which formerly had been used separately in the same works required invention.

Major-General Bingham, formerly Director General of Designs at the Ministry of Munitions, gave evidence in support of the claim. He considered that it was Viscount Chetwynd who discovered the secret which enabled 80 per cent. of ammonium nitrate to be used to 20 per cent. of T.N.T., and still to get perfect detonation.

Cross-examined by the Solicitor-General, Viscount Chetwynd said he first made up his mind to claim an award in April, 1925. Up to that time he had always refused to make a claim, but he was urged by several people to do so. In answer to a question, he stated that the awards made to other people had absolutely nothing to do with his changing his mind and deciding to make a claim. Replying further, Viscount Chetwynd said that it was his duty to run the factory at Chilwell as economically as possible. He was not asking for a grant because he reported to the Ministry of Munitions something which he saw when a member of a mission to France, but for having "discovered or appreciated or realised things that technical men of great ability had not recognised." It was true that experiments were made by members of the staff at the Chilwell factory in their official capacity. He thought of the inventions as the result of those experiments. It was not true that his inventions were used only at Chilwell; they were used at every national filling factory in the country.

The hearing was adjourned till Monday.

The Joseph Dixon Centenary

ON the occasion of the hundredth anniversary of the Joseph Dixon Crucible Co., an interesting brochure, "A Tale of Yesterday, To-day, and To-morrow," has been issued. It is the work of Floyd W. Parsons, and is written with unusual vigour and imagination. The history of the Dixon Co. is told in a picturesque form. If there is one conclusion more than another that the booklet emphasises, it is embodied in the following passage:—"The years just ahead will be a time of intense competition. Hundreds of products will undergo amazing changes. Corporations in a rut will find themselves left hopelessly behind in the heart-breaking race. Thousands of companies will close their doors and pass out of existence. The ones that survive will do so because of their early recognition that a part of every dollar they take in must be devoted to scientific research, both in production and marketing."

A Nitrogen Fixation Project in the United States

THE erection of an atmospheric nitrogen fixation plant is being considered by the Allied Chemical and Dye Corporation, which has chemical works throughout Canada and the United States and comprises the Barrett Co., the General Chemical Co., the National Aniline and Chemical Co., and the Solvay Process Co., and other companies. Since 1914 the company has been engaged on research work on this industry and a laboratory plant involving an investment of \$4,500,000 was set up. The results now obtained are considered sufficiently favourable to justify an ambitious programme for the manufacture of synthetic nitrogen compounds from raw material available in the United States. Four hundred acres for this purpose have been secured at Hopewell, Virginia. The project embraces an ultimate expenditure of from \$100,000,000 to \$125,000,000.

Company News

BRUNNER, MOND AND CO., LTD.—An interim distribution of 2 per cent., less tax, has been declared. This compares with an interim dividend of 3½ per cent. paid for each of the three preceding years on the ordinary capital.

CASSEL CYANIDE CO., LTD.—The offer to exchange Imperial Chemical Industries shares for shares in the Cassel Cyanide Co. has been accepted, it is announced, by over 80 per cent. of the shareholders, and transfers for the carrying out of the arrangement are being issued.

W. AND H. M. GOULDING, LTD.—The directors have decided to recommend a dividend at the rate of 5½ per cent. on the preference shares and 5 per cent. per annum on the ordinary shares for the year ended June 30 last. These dividends will be payable, as usual, in two equal instalments on July 31 and December 31 next, less income-tax at 3s. 9d. in the £.

CELANESE CORPORATION OF AMERICA.—At a special meeting of the holders of the first mortgage ten-year 8 per cent. convertible sterling bonds, held in London, on Monday, resolutions were unanimously carried increasing the number of shares of the capital stock from 1,130,000 to 1,400,000 shares to consist of 250,000 shares of the par value of \$100 each of prior preferred stock, and 150,000 shares of the par value.

SANTA RITA NITRATE CO.—For the 12 months ended December 31, 1926, the report states that the accounts show a trading loss of £5,023, to which is added £14,101 for stoppage expenses, £3,517 London expenses, and £1,181 for income-tax, making a total of £23,822. After crediting various items, together amounting to £1,107, and allowing for the balance brought forward, there remains a debit balance to be carried forward of £3,491. In 1925 there was a gross profit of £20,256 and a net profit of £15,812. A dividend of 10 per cent. was paid for that year.

BRITISH OXYGEN CO., LTD.—After dealing with the accounts at the annual meeting held in London, on July 14, the chairman said that in view of the satisfactory financial position and the present trade improvement, the directors felt justified in recommending the payment of a total dividend for the year of 8 per cent., absorbing £60,000, of which 2½ per cent. (£18,750) had been distributed in December last, and leaving a balance of £145,147 to carry forward, as compared with £172,374 brought in, out of which, however, £35,000 had been paid during the year on account of corporation profits tax and income-tax.

NATIONAL SMELTING CO.—The net profit for 1926 amounted to £330,752 (against £99,261 in 1925). There is transferred to reserve £100,000 (against nil), while additional depreciation of plant is provided for in the sum of £27,820 (against nil), and £10,000 (against nil) is appropriated to staff funds. The ordinary dividend is 10 (against 5) per cent., this involving an additional 2 per cent. to the preference shareholders, making their total dividend 10 per cent. The amount carried forward is £48,582. After providing for the 1925 dividend, the amount brought into this year's accounts was £20,650. The meeting is called for July 28 at Winchester House, London.

CHEMICAL AND METALLURGICAL CORPORATION, LTD.—The seventh report of the company states, with reference to the acquisition of a site for the company's works on the Manchester Ship Canal, that good progress has been made in the erection of the plant, which will include apparatus for the independent production by the company of hydrochloric and sulphuric acids, which are necessary in the ore reduction processes. The company's experimental works at Stratford, E., have continued to operate, treating successfully, it is added, a great variety of complex ores. The capital as at December 31 last consisted of £200,000 8 per cent. cumulative preference shares (on arrears as to £16,000) and 3,359,063 ordinary shares of 2s.

Chemical Definition of Castile Soap

THE NATURE AND CHARACTERISTICS of "Castile soap" (Jabon de Castilla) has been defined by a recent Spanish Royal Decree. It must not contain more than 20 per cent. of water nor more than 0.3 per cent. of free alkali by weight. When the fatty substances are broken up by means of mineral acids and extracted, they must show an iodine index figure, by the Hübl method, of from 69 to 82. The oleorefractometric degree of the acids indicated must be between 41 and 43 at 40 degrees.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the registration of the following trade marks can be lodged up to August 13, 1927.

PERMAGLINT.

476,412. Class 1. A colourless preparation for preventing tarnish on metallic surfaces. Metallic Wallplugs, Ltd., 88, Hatton Garden, London, E.C.1; manufacturers. January 5, 1927.

ELECTROLUX.

478,769. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Electrolux, Ltd., 153 and 155, Regent Street, London, W.1; manufacturers. March 14, 1927.

LACTOLOID.

480,364. Class 1. Nitro-cellulose lacquers, enamels and paints. Thornley and Knight, Ltd., 132, Bordesley Green Road, Birmingham; varnish, japan and colour manufacturers. May 6, 1927. (To be associated, Sect. 24.)

ATINOSOL.

481,292. Class 3. Chemical substances prepared for use in medicine and pharmacy. May and Baker, Ltd., Garden Wharf, Church Road, Battersea, London, S.W.11; manufacturers. June 7, 1927.

Tariff Changes

UNITED STATES.—A recent Act provides for precautions to be taken in the sale and distribution of certain dangerous caustic or corrosive acids, alkalis, etc. Import, export, and delivery is prohibited except in properly marked packages.

HUNGARY.—Hungarian customs import duties have been modified in accordance with the Franco-Hungarian agreement and the modifications affect similar goods coming from the United Kingdom and other nations enjoying the most-favoured-nation treatment in Hungary. The reduced duties affect transparent cellulose sheets and alcoholic lacquers and varnishes, while artificial silk yarns and ribbons are affected by an increased duty.

SWEDEN.—Ethyl englycol, cresol phosphoric acid, lithium carbonate and other lithium compounds, artificial arsenic sulphide are among articles affected by the changes made in the Swedish Customs Tariff, full details of which are given in the *Board of Trade Journal* for July 14, 1927.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CRUDE METALS AND METAL WASTE.—An agent in Cologne desires to secure the representation, on a commission basis, for Rhineland and Westphalia, of British manufacturers of or dealers in all crude metals and metal waste. (Ref. No. 506.)

PHARMACEUTICAL PRODUCTS AND SPECIALITIES.—A firm of agents in Salonika wish to obtain on a commission basis the representation of British manufacturers of the above goods. (Ref. No. 62.)

SULPHATE OF AMMONIA.—A company in Palermo desire to obtain the exclusive agency for the Island of Sicily of British manufacturers of sulphate of ammonia. (Ref. No. 66.)

SUGAR BEET NEWS.—Trials in sugar beet growing carried out last year in different parts of Carnarvonshire, in connection with the Madryn Farm School, have successfully demonstrated the possibilities of sugar beet production so far as the sugar content is concerned. In some cases an average sugar content of 17 per cent. was obtained. The most serious drawback to development is the cost of transit.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

SENIOR CROZIER AND CO., LTD., Union Works, Union Street, Stratford, chemical manufacturers. (C.C., 23/7/27.) £14 16s. June 14.

SUTER, Jean E., 30, Gleneldon Road, Streatham, chemical buyer. (C.C., 23/7/27.) £22 12s. 6d. May 27.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

DOVEY VALLEY SILICA SYNDICATE, LTD., London, E.C. (M., 23/7/27.) Registered July 1, £250 debentures, part of £5,000; general charge. *Nil. December 31, 1925.

London Gazette, &c.

Companies Winding Up Voluntarily

NATIONAL OIL AND PRODUCTS CO., LTD. (C.W.U.V., 23/7/27.) By Special Resolution June 30, confirmed July 15. A. C. Dean appointed as liquidator. Meeting of creditors at 58, West Smithfield, London, Friday, July 29, at noon.

WESTON CHEMICAL CO., LTD. (C.W.U.V., 23/7/27.) By Special Resolution June 20, confirmed July 7. R. A. Lynex, Nobel House, Buckingham Gate, London, S.W.1, appointed as liquidator. (Note.—All creditors will be paid in full.)

New Companies Registered

FULLER'S EARTH MINING CORPORATION.—Registered as a "public" company on July 14. Nom. capital of £2,100 in 2,000 8 per cent. non-cumulative preferred participating shares of £1 each and 2,000 ordinary shares of 1s. each. To enter into two agreements with Muros, Ltd., and to carry on the business of manufacturers and workers of and dealers in fuller's earth, cement, concrete, lime, gravel, sand, minerals, earth, coke, etc. Subscribers: W. Mitchell, 24, Twyford Road, Ilford, and R. C. Howley.

HIGGINBOTTOM AND CO. (MANCHESTER), LTD., 21, Spring Gardens, Manchester.—Private company. Registered July 18. Nom. capital, £8,000 in £1 shares. To acquire the business of chemical, drug, metal, minerals and general merchants now carried on by H. Worthington, H. C. Pickering, and H. Black, at 21, Spring Gardens, Manchester, as "Higginbottom and Co." The permanent directors are: H. Worthington (managing director), 4, Broomfield Road, Heaton Moor, Stockport, H. C. Pickering, H. Black.

THE BRUNLER SYNDICATE, LIMITED, was registered as a "private" company on July 18. Nom. capital, £42,000 in 40,000 "A" shares of £1 each and 40,000 "B" shares of 1s. each. To carry on the business of manufacturers and preparers of nitric acid (calcium nitrate) and other products by burning fuel under water with air enriched with oxygen, suppliers of motive power by processes for burning oil or other fuel under water, or by the evaporation of sewage sludge,

wood pulp sulphite residues or other substances, etc., and to adopt an agreement between O. Brunler, W. R. Ormandy, D.Sc., and the company. The subscribers are: W. R. Ormandy, 18, Belsize Grove, London, J. Smith, 146, Blagdon Road, New Malden, Surrey.

THE INTERNATIONAL BEET SUGAR CORPORATION, LTD., 56, Victoria Street, Westminster, London, S.W.1. Registered as a "public" company on July 15. Nom. capital, £37,500 in 30,000 7½ per cent. preference and 5,000 ordinary shares of £1 each and 50,000 deferred shares of 1s. each. To erect or acquire beet sugar factories or plants, works or buildings connected with the beet sugar industry, to carry on the business of sugar refiners, industrial, manufacturing and general chemists, manufacturers of and dealers in drugs, chemicals, sand, alkaline, and all kinds of substances, liquids and preparations used in or appertaining to the manufacture, preparation and refining of sugar, etc.

PREMIER FILM PRINTING CO., LTD., Upper Grove Street, Leamington, Warwick. Registered July 15. Nom. capital £1,000 in £1 shares. To adopt an agreement with the Premier Film Printing and Chemical Co., Ltd., for the purchase of the business now carried on by them at Leamington, Warwick. Directors: A. Edwards, O. A. Picot, and E. W. Houghton.

Chemical Case Before Anglo-German Tribunal

THE Anglo-German Mixed Arbitral Tribunal (Second Division), sitting in London on Thursday, July 7, allowed a claim brought by A. E. Wassermann, a German national, living in Berlin, against Leon Rueff, a British national, the manager at the outbreak of war of the Swiss Bank in London, for £1,218 6s. 2d. It appeared that before the war A. E. Wassermann transacted the banking business of the debtor in Germany, and held certain bearer shares belonging to the debtor in the Dellarocca Chemische Fabriken A.G. On June 23, 1914, this company offered their shareholders a loan of 50 per cent. of the nominal amount of their shareholdings at 4 per cent. interest, subject to repayment at three months' notice. This offer was accepted by the debtor in a letter dated June 26, 1914, addressed to the creditor, who thereupon handed over the bearer shares to the company, receiving 25,000 m., which he transmitted to the debtor in London. On October 14, 1916, the company gave notice to the creditor of repayment, and the creditor on behalf of the debtor repaid the loan to the company, with interest to date. Mr. Claud Mullins, for the British debtor, urged that it was not a loan transaction at all. The German company was in liquidation before the war and made an offer to its shareholders to return half their capital. The debtor accepted the offer and regarded the money he received as a first instalment of his own money. Judgment was entered as above, with interest at 4 per cent. per annum, from June 30, 1914, £30 being allowed as costs.

Benn Brothers' Other Journals

THE CABINET MAKER.—Retail Furniture Displays; The Retail Furnisher and His Public; "How to Advertise a Retail Furniture Shop," by Gilbert Russell.

THE ELECTRICIAN.—The Paris E.H.T. Conference; "Routine Testing of Insulating Materials," by L. G. Hill; The Scottish Electricity Scheme.

THE FRUIT GROWER.—Australian Fresh Fruit Exports; The Threat of State Control; Special Report on Cherry and Soft Fruit Show at Sevenoaks; Fruit Imports in June.

THE GAS WORLD.—Meeting of the Association Technique de l'Industrie du Gaz en France; "Surplus Heat Utilisation Possibilities in Canadian Gas Plants," by W. C. Philpott; "Decomposition of Coke Oven Gas in Relation to Distance Distribution," by Herr F. Borchardt.

GARDENING ILLUSTRATED.—A Great Exhibition of New Roses; "The Difficulties of an Amateur," by Col. A. H. Wolley-Dod; Notes from a Cornish Garden, by Peter the Hermit.

THE HARDWARE TRADE JOURNAL.—Merchandise Marks: Results of Inquiry on Iron and Steel; A Review of the Bolt and Nut Industry; The Cutlery and Plate Trade; New Lock-nut Patents.

THE TIMBER TRADES JOURNAL.—English Joinery Manufacturers and Foreign Competition; Deputation to the House of Commons; Scottish Foresters in Belgium; Outstanding Lessons of the Tour; The Straining of Band-Saws.

